



Berkeley Aquatic Park Improvement Program Draft Environmental Impact Report

State Clearinghouse No. 2009062093

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Prepared for
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Abbreviations

| Abbreviation | Definition |
|---------------|---|
| ABAG | Association of Bay Area Governments |
| ACCWP | Alameda Countywide Clean Water Program |
| APIP | Aquatic Park Improvement Program |
| APNs | Assessor's Parcel Numbers |
| Ashby Avenue | State Route 13 |
| Balance | Balance Hydrologics, Inc. |
| BASMAA | Bay Area Stormwater Management Agencies Association |
| Bay | San Francisco Bay |
| BCDC | Bay Conservation and Development Commission |
| BI | Beneficial Impact |
| BMPs | best management practices |
| BMPs | Best Management Practices |
| CDFG | California Department of Fish and Game |
| CDFG | California Department of Fish and Game |
| CEQA | California Environmental Quality Act |
| CESA | California Endangered Species Act |
| CFGF | California Fish and Game Commission |
| cfs | cubic feet per second |
| CHHSL | California Human Health Screening Level |
| City | City of Berkeley |
| CNDDDB | California Natural Diversity Database |
| CNPS | California Native Plant Society |
| COLD | coldwater habitat |
| Corps | U.S. Army Corps of Engineers |
| CWA | Clean Water Act |
| DMMO | Dredged Material Management Office |
| DTSC | Department of Toxic Substance Control |
| EBMUD | East Bay Municipal Utility District |
| EIR | Environmental Impact Report |
| ENVIRON | ENVIRON International Corporation |
| EPA | Environmental Protection Agency |
| ESA | Endangered Species Act |
| EST | estuarine habitat |
| ETo | evapotranspiration |
| FE | Federally endangered |
| FEMA | Federal Emergency Management Agency |
| FIRM | Flood Insurance Rate Map |
| FIS | Flood Insurance Study |
| FT | Federally threatened |
| GCC | global climate change |
| HSI | Hydrologic Systems, Inc. |
| Interstate 80 | Interstate 80/580 |
| ITM | Inland Testing Manual |
| JARPA | Joint Aquatic Resource Permit Application |
| LID | Low Impact Design |
| LID/GI | Low Impact Development/Green Infrastructure |
| LMA | Laurel Marcus & Associates |

| Abbreviation | Definition |
|---------------------|--|
| LTS | Less-than-significant |
| MBTA | Migratory Bird Treaty Act |
| mg/L | milligrams per liter |
| MIGR | migration |
| MLLW | Mean Lower Low Water |
| MLOE | Multiple Lines of Evidence |
| MMRP | Mitigation Monitoring and Reporting Program |
| MPN | Most Probable Number |
| MYB | Model Yacht Basin |
| NAL | Numeric Action Levels |
| NAVD 88 | North American Vertical Datum 1988 |
| NCDC | National Climatic Data Center |
| NGVD 1929 | National Geodetic Vertical Datum of 1929 |
| NI | No Impact |
| NMFS | National Marine Fisheries Service |
| No Additional SW | No Additional Stormwater |
| No SW-Sealed | No Stormwater-Sealed Manholes |
| No SW-Unsealed | No Stormwater-Unsealed Manholes |
| NOAA | National Oceanic and Atmospheric Administration |
| NOI | Notice of Intent |
| NOP | Notice of Preparation |
| NOP | Notice of Preparation |
| NPDES | National Pollutant Discharge Elimination System |
| NPDES | National Pollutant Discharge Elimination System |
| NRCS | National Resources Conservation Service |
| NRMS | Aquatic Park Natural Resource Management Study |
| OES | Office of Emergency Services |
| OMM | operation, maintenance, and monitoring |
| P&RC | Parks and Recreation Commission |
| PAHs | polycyclic aromatic hydrocarbons |
| PCBs | polychlorinated biphenyls |
| PCWQA | Porter-Cologne Water Quality Control Act |
| ppt | parts per thousand |
| PS | Potentially significant |
| REAP | Rain Event Action Plan |
| RWQCB | San Francisco Bay Regional Water Quality Control Board |
| RWQCBs | Regional Water Quality Control Boards |
| S | Significant |
| SC | State species of concern |
| SCS | Soil Conservation Service (now NRCS) |
| SE | State endangered |
| SFBRWQCB | San Francisco Bay Regional Water Quality Control Board |
| SFEI | San Francisco Estuary Institute |
| SLC | State Lands Commission |
| SPAWN | State-designated beneficial uses of spawning |
| ST | State threatened |
| SWAMP | Surface Water Ambient Monitoring Program |
| SWAMP | Surface Water Ambient Monitoring Program |
| SWMM | Stormwater Management Model |
| SWPPP | Stormwater Pollution Prevention Plan |

| Abbreviation | Definition |
|---------------------|---|
| SWRCB | State Water Resources Control Board |
| SWRCB | State Water Resources Control Board |
| TDS | total dissolved solids |
| TMDL | total maximum daily load |
| TSS | total suspended sediment |
| USC | United States Code |
| USDA | United States Department of Agriculture |
| USFWS | United States Fish and Wildlife Service |
| WLD | wildlife habitat |
| WMP | Watershed Management Plan |
| WPA | Works Progress Administration |
| WRCC | Western Regional Climate Center |

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Section 1

Summary

1.1 PROJECT OVERVIEW AND PROJECT LOCATION

The project site consists of Aquatic Park (Park), located on the western edge of the City of Berkeley, adjacent to Interstate 80 (I-80) between Ashby Avenue and University Avenue. Aquatic Park encompasses 102 acres and includes three separate lagoons, which support a variety of wildlife, including fish, invertebrates, and birds. The Park consists of 68 acres of open water in the three lagoons, 0.7 acre of salt/brackish wetland, 1.1 acres of freshwater wetland, 11 acres of lawn, 7 acres of roads and trails, and 14 acres of buildings and uplands. The three lagoons consist of the Main Lagoon, the Model Yacht Basin, and the Radio Tower Pond, from the north to the south, respectively.

Efforts to improve Aquatic Park began in 1990, when the City of Berkeley completed a Draft Master Plan for Aquatic Park identifying the enhancement of natural resources and improvement of water quality as major goals for the park. In 2003, the Aquatic Park Natural Resource Management Study (NRMS) was prepared to evaluate the hydrological features, habitat extent and recreational uses in Aquatic Park, with a primary focus on improving water quality. The NRMS identified a range of alternatives for water quality and habitat improvements and recommended improving water quality in the three lagoons by increasing water circulation, primarily through better tidal exchange, and improving wetland habitat areas. In 2006, the City prepared the Aquatic Park Improvement Program (APIP), which included concept-level designs for the major recommendations in the NRMS. The APIP analyzed and modeled 14 potential scenarios for achieving the goals identified in the NRMS. Based on the data collection, concept design, constraints and opportunities analysis, and model analysis, APIP Alternative 4B (No Additional Stormwater) was identified as the best alternative for the hydrologic component of the APIP.¹

However, in response to concern that *any* volume of stormwater entering the Aquatic Park lagoons would prevent the City from meeting its goals of improved water quality and biological resources, when the City's Parks and Recreation Commission (P&RC) considered the APIP, it recommended to the City Council that the hydrologic component be modified to eliminate any stormwater inflow into the lagoon system from the Strawberry and Potter streets storm drain connections. Accordingly, the Draft EIR analyzes the APIP with the hydrologic component as modified by the P&RC as the "Preferred Project" and referred to as "No Stormwater-Unsealed Manholes" (No SW-Unsealed).

¹ The Natural Resource Management Study (NRMS) and the Aquatic Park Improvement Program (APIP) Technical Report are available for review Monday through Friday between the hours of 8:30 am and 4:00 p.m. at the City of Berkeley, Parks Recreation and Waterfront Administration Office, 2180 Milvia Street, 3rd Floor, and the City of Berkeley, Recreation Offices, 1947 Center Street, 1st Floor. The documents are also available online by clicking the APIP link on the City's Parks Recreation and Waterfront website: <http://www.ci.berkeley.ca.us/parks>.

This Draft EIR analyzes three alternatives to the Preferred Project, which are summarized in Section 1.3, below, and described in more detail in Section 5, Alternatives:

- No Stormwater-Sealed Manholes (No SW-Sealed) – This is the same as the Preferred Project except that the manholes along the stormwater drainage line are sealed to prevent stormwater overflow.
- No Additional Stormwater (No Additional SW) – This is the original APIP Alternative 4B, prior to modification of its hydrologic component by the P&RC.
- No Project – This is the CEQA-mandated alternative of taking no action.

All alternatives other than “No Project” share the following primary project components identified in APIP:

- Enlarging the connection between the Potter Street storm drain and the Model Yacht Basin and improving tidal and stormwater flow control capability;
- Constructing an open channel connection between the Model Yacht Basin and the Main Lagoon;
- Installing new slide gates and enlarging the connection on the Strawberry storm drain;
- Repairing the five tide tubes that connect the Main Lagoon to the Bay to the extent feasible; and
- Connecting the Radio Tower Pond to the Potter Street storm drain.

In addition to the components listed above, the Preferred Project and each of the alternatives except the No Project alternative would involve identical habitat restoration within the Aquatic Park lagoons, shoreline, and upland areas.

1.2 AREAS OF CONTROVERSY

CEQA Guidelines Section 15123 specifies that the Draft EIR summary identify “areas of controversy” known to the lead agency, including issues raised by agencies and the public, and issues to be resolved, including the choice among alternatives and whether or how to mitigate the significant effects. The Notice of Preparation (NOP) was initially released for the Preferred Project on June 24, 2009, for a 35-day public review period. The first public scoping meeting was held on July 9, 2009, by the lead agency. The NOP noted that the Preferred Project may have a significant effect on the environment and that an EIR would be prepared for the Preferred Project.

The NOP was then recirculated on October 19, 2011, in order to solicit additional comments that may have arisen since circulation of the initial NOP. The recirculated NOP was released for a 33-day public review period. During the second public review period, two additional public scoping meetings were held to solicit comments on the scope of the Draft EIR. The first meeting was held on October 24,

2011, before the P&RC, and the second public meeting was held on November 16, 2011. The following list is based on written comments received and comments stated during the public scoping meeting. The topics that would result in physical impacts under CEQA are addressed in the EIR analysis. Major areas of controversy include, but are not limited to:

- **Hydrology and Water Quality:**
 - Issues related to stormwater overflow in West Berkeley and into the Aquatic Park lagoons;
 - Concern that the Preferred Project would increase the amount of stormwater flow into Aquatic Park;
 - Issues related to water quality in the Aquatic Park lagoons and how tidal exchange between the lagoons and the Bay would be achieved;
 - Potential for construction-related impacts on water quality in the Aquatic Park lagoons; and
 - Effects related to sea level rise and lagoon water levels.
- **Biological Resources:**
 - Effect of stormwater runoff on aquatic and wetland habitat, vegetation, and fish and wildlife species.

1.3 ALTERNATIVES

Section 5 of this Draft EIR analyzes a range of reasonable alternatives to the Preferred Project. Alternatives to the Preferred Project that are analyzed include:

- **Alternative 1: No Stormwater-Sealed Manholes (No SW-Sealed).** The No SW-Sealed alternative is identical to the Preferred Project with respect to the proposed circulatory infrastructure improvements to the Aquatic Park lagoons and the storm drain modifications and management regime. However, the No SW-Sealed alternative would seal the manholes along the Potter Street storm drain line in order to prevent stormwater overflows in the lower portion of the Aquatic Park watershed.
- **Alternative 2: No Additional Stormwater (No Additional SW).** The APIP Technical Report Alternative 4B is evaluated as the No Additional SW alternative. The No Additional SW alternative would include the same circulatory infrastructure improvements to the Aquatic Park lagoons and storm drain modifications as the project; however, this alternative proposes a different stormwater management regime. Under the No Additional SW alternative the slide gates on the storm drains would remain open during dry periods to facilitate tidal exchange, and close upon initiation of flow in the upstream storm drain network. However, the gates to the lagoons would re-open during large storm events equal to or larger than the 2-year storm that would threaten to cause increased flooding upstream.
- **Alternative 3: No Project Alternative.** Under the No Project Alternative, Aquatic Park would remain unchanged. The existing infrastructure that allows inter-lagoon circulation, exchange with the Bay, and inflow and outflow through the Potter Street and Strawberry storm drain

lines would remain as-is. In addition, no wetland or habitat restoration would take place under this alternative.

1.4 IMPACTS AND MITIGATION MEASURES

Table S-1 presents a summary of the impacts of the Preferred Project, proposed mitigation, and each impact's level of significance after mitigation. The environmental impacts are identified and classified as "Significant," "Potentially Significant," "Less Than Significant," or "No Impact." According to the CEQA Guidelines Section 15382, a significant impact is "... a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project ..." CEQA Guidelines Section 15126.4(a)(1) also states that an EIR "... shall describe feasible mitigation measures which could minimize significant adverse impacts ..." All feasible mitigation measures have been included.

1.5 DRAFT EIR CONCLUSIONS

In accordance with CEQA Guidelines Section 15123(b)(3), this Summary must identify issues to be resolved including whether or how to mitigate the significant effects and the choice among alternatives. Section 4 of the Draft EIR presents mitigation measures to reduce or avoid significant impacts identified for the Preferred Project. In some instances, the Draft EIR identifies mitigation options to address specific impacts. During the CEQA environmental review process, the City will need to resolve which mitigation measures are suitable and whether they can effectively reduce impacts to a less-than-significant level. A Mitigation Monitoring and Reporting Program (MMRP) will be prepared to define the timing of implementation of the measures, parties responsible for implementation, and parties responsible for reporting and verifying implementation.

The Draft EIR identifies impacts that would remain significant and unavoidable even after implementation of the proposed mitigation measures. Consequently, the City will need to determine whether to approve the Preferred Project as proposed and, if so, provide its rationale in a Statement of Overriding Considerations.

Finally, Section 5 of this Draft EIR presents the alternatives for the Preferred Project, as outlined above. The City will need to resolve whether these alternatives are preferable from an environmental and community perspective, compared to the Preferred Project.

Table S-1
Summary of Impacts and Mitigation Measures

| Impacts | Impact Significance Without Mitigation | Mitigation Measures | Impact Significance With Mitigation |
|---|---|--|--|
| 4.2 Biological Resources | | | |
| BR-1 Construction of the Preferred Project could have a substantial adverse effect, either directly, or indirectly, through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS. | LTS | No Mitigation Required | N/A |
| BR-2 Operation of the Preferred Project would not have a substantial adverse effect, either directly, or indirectly, through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS. | LTS | No Mitigation Required | N/A |
| BR-3 Construction of the Preferred Project could have a substantial adverse effect on wetland habitat. | PS | <i>BR-3.1 Wetland Habitat Protection.</i> Implement Mitigation Measures HYD-1.1, HYD-1.2, HYD-1.3, HYD-1.4, and HYD-4.1. | LTS |
| BR-4 Operation of the Preferred Project would not have a substantial adverse effect on wetland habitat. | LTS | No Mitigation Required | N/A |
| BR-5 The Preferred Project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. | LTS | No Mitigation Required | N/A |

SU = Significant and Unavoidable PS = Potentially Significant LTS = Less than Significant NI = No Impact

Table S-1
Summary of Impacts and Mitigation Measures

| Impacts | Impact Significance Without Mitigation | Mitigation Measures | Impact Significance With Mitigation |
|---|---|---|--|
| BR-6 The Preferred Project has the potential to impact nesting birds. | PS | <p><i>BR-6.1 Identify and Protect Nesting Migratory Birds at the Project Site.</i> The City shall implement the following measures to reduce impacts to nesting migratory birds:</p> <ul style="list-style-type: none"> a. To facilitate compliance with State and federal law (Fish and Game Code and the MBTA) and prevent impacts to nesting birds, the City shall avoid the removal of trees, shrubs, or weedy vegetation February 1 through August 31 during the bird nesting period. If no vegetation or tree removal is proposed during the nesting period, no surveys are required. If it is not feasible to avoid the nesting period, a survey for nesting birds shall be conducted by a qualified wildlife biologist no earlier than seven days prior to the removal of trees, shrubs, weedy vegetation, buildings, or other construction activity. b. Survey results shall be valid for the tree removals for 21 days following the survey. If the trees are not removed within the 21-day period, then a new survey shall be conducted. The area surveyed shall include all construction areas as well as areas within 150 feet outside the boundaries of the areas to be cleared or as otherwise determined by the biologist. c. In the event that an active nest for a protected species of bird is discovered in the areas to be cleared, or in other habitats within 150 feet of construction boundaries, clearing and construction shall be postponed for at least two weeks or until the biologist has determined that the young have fledged (left the nest), the nest is vacated, and there is no evidence of second nesting attempts. <p><i>BR-6.2 Precautions during Restoration of Bird Island.</i> The City shall adhere to the following requirements during the restoration of Bird Island.</p> <ul style="list-style-type: none"> a. Ground-nesting bird species (various wading birds, gulls, and ducks) could potentially nest on Bird Island. All Bird Island restoration activities, including the placement of riprap and fill material, shall occur outside of the bird nesting season (February 1 | LTS |

SU = Significant and Unavoidable PS = Potentially Significant LTS = Less than Significant NI = No Impact

Table S-1
Summary of Impacts and Mitigation Measures

| Impacts | Impact Significance Without Mitigation | Mitigation Measures | Impact Significance With Mitigation |
|--|---|---|--|
| BR-7 Construction of the Preferred Project has the potential to impact overwintering Monarch butterflies. | PS | <p>through August 31).</p> <p>b. If Bird Island restoration activities, including the placement of riprap and fill material, cannot be avoided during the bird nesting season (February 1 through August 31), then nesting bird surveys (BR-6.1) shall be completed by a qualified biologist (See Mitigation Measure BR-4.1 for detailed mitigation measures for nesting birds).</p> <p>c. Implement Mitigation Measure BR-3.1.</p> <p>BR-7.1 Identify and Protect Trees supporting overwintering Monarch butterflies at the project site. The City shall implement the following measures to reduce impacts to overwintering Monarch butterflies.</p> <p>a. Avoid removal of any trees (native or non-native) known to support overwintering Monarch butterflies.</p> <p>b. If eucalyptus trees known to support overwintering Monarch butterflies are to be removed, removal shall occur when Monarch butterflies are not present (typically late March through late August).</p> <p>c. If possible, any eucalyptus trees removed known to support overwintering Monarch butterflies shall be replaced with relatively large, evergreen native species such as California bay or Monterey pine.</p> | LTS |
| BR-8 Conflicts with any Local Policies or Ordinances Protecting Biological Resources. The Preferred Project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. | LTS | No Mitigation Required | N/A |

SU = Significant and Unavoidable PS = Potentially Significant LTS = Less than Significant NI = No Impact

Table S-1
Summary of Impacts and Mitigation Measures

| Impacts | Impact Significance Without Mitigation | Mitigation Measures | Impact Significance With Mitigation |
|--|---|---|--|
| 4.3 Hydrology and Water Quality | | | |
| HYD-1 Construction of the Preferred Project could violate water quality standards or waste discharge requirements (i.e., as established by the San Francisco Bay RWQCB). | PS | <p><i>HYD-1.1 Soil Management Plan.</i> Prior to construction, soils and sediment at sites where soil or sediment could be disturbed by project activities or otherwise enter the environment shall be characterized using appropriate methodologies. As part of the application to the Bay Conservation and Development Commission (BCDC) and Dredged Material Management Office (DMMO) for construction of the tide tube headwall, the City shall include a Sampling and Analysis Plan (SAP) to evaluate suitability of dredge material for disposal or beneficial re-use according to protocols set forth in the U.S. Environmental Protection Agency (USEPA) and U.S. Army Corps of Engineers (Corps) Public Notice 01-01, the Inland Testing Manual (ITM).² The local guidance for applying the ITM in the San Francisco Bay region³ states that sediment quality will be primarily assessed through physical and chemical analyses. The DMMO may also require water column toxicity tests, benthic toxicity tests and/or benthic bioaccumulation tests on pre-project, pre-excavation sediment samples. The local guidance states that the DMMO has considerable flexibility to approve on a case-by-case basis, as described below, testing methods which differ from those described in the ITM.</p> <p>Applications to the Corps and RWQCB for dredge permits under Sections 401 and 404 of the CWA must include a work plan prepared by a qualified professional in accordance with the Multiple Lines of Evidence (MLOE) methodology set forth in the State Water Resources Control Board Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1 Sediment Quality (August 2009), or in accordance with a work plan prepared in accordance with USEPA Guidelines for</p> | LTS |

² USEPA and Army Corps of Engineers, Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. – Testing Manual, EPA-823-B-98-004, February 1998, 176 p. + appendices.

³ Dredged Material Management Office, Guidelines for Implementing the Inland Testing Manual in the San Francisco Bay Region, Sept. 2001, 18 p.

SU = Significant and Unavoidable PS = Potentially Significant LTS = Less than Significant NI = No Impact

Table S-1
Summary of Impacts and Mitigation Measures

| Impacts | Impact Significance Without Mitigation | Mitigation Measures | Impact Significance With Mitigation |
|---------|---|---|--|
| | | <p>Ecological Risk Assessment (EPA/630/F-95/002F). Prior to developing the work plan, the City shall consult with these two agencies and the DMMO, as to the appropriate sediment testing and evaluation protocol to address agency concerns regarding potential water quality and/or wetlands effects.</p> <p>For both the DMMO and CWA Section 404/401 permits, based on the results of implementing the work plan, suitability of soils and sediments shall be compared with applicable sediment quality guidelines for beneficial re-use or disposal, such as the sediment quality objectives currently under development by the State Water Resources Control Board (State Water Resources Control Board Proposed Amendments to the Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1 Sediment Quality for the Protection of Fish and Wildlife January 11, 2011), or risk levels estimated in the ecological risk assessment. If it is determined that soil or sediment contains contaminants that would pose a water quality or biotic risk as a result of construction and operation, the affected soil/sediment shall not be re-used onsite and shall be removed and disposed of following applicable regulations. If it is determined soil/sediment can be beneficially reused on-site, the project sponsor shall implement Mitigation Measure HYD-1.4 (Construction Dredging) and HYD-4.1 (Sediment Deposition Monitoring and Dredging Plan) to ensure sediment quality is monitored over the long-term, and, corrective action is implemented if water quality impairment has been identified as a result of project operation.</p> <p><i>HYD-1.2 Erosion and Sediment Control Plan (ESCP).</i> Prior to construction, the City shall prepare and submit an ESCP for review and approval by the Public Works Department prior to issuance of a grading permit. The construction phase controls outlined in the ESCP would include components for erosion control, such as phasing of grading, limiting areas of disturbance, designation of restricted-entry zones, diversion of runoff or run-on away from disturbed areas, protective measures for sensitive areas, outlet protection, and provision for re-</p> | |

SU = Significant and Unavoidable PS = Potentially Significant LTS = Less than Significant NI = No Impact

Table S-1
Summary of Impacts and Mitigation Measures

| Impacts | Impact Significance Without Mitigation | Mitigation Measures | Impact Significance With Mitigation |
|---------|---|--|--|
| | | <p>vegetation or mulching. The plans would also prescribe treatment measures to trap sediment once it has been mobilized, at a scale and density appropriate to the size and slope of the catchment. For ground-disturbing construction activities necessary under Preferred Project, these measures might include inlet protection, straw bale barriers, straw mulching, straw wattles, and silt fencing. As described above, the components of the ESCP shall be identical to those included in the SWPPP, required by adherence to the NPDES Construction General Permit.</p> <p>The project shall be required to fully implement the ESCP, and the City Public Works Department shall monitor these measures during project construction.</p> <p><i>HYD-1.3 Stormwater Pollution Prevention Plan.</i> Prior to construction, the City shall submit an NOI to SWRCB for coverage under the NPDES Construction General Permit and prepare and submit a SWPPP for review and approval by the Public Works Department (City Engineer) prior to issuance of a Final Map. The SWPPP shall incorporate the erosion and sediment control measures described in the project ESCP. BMPs such as sediment traps, storm drain inlet protection, vegetated swales, and media filtration systems, shall be designed based on specific criteria from recognized BMP design guidance manuals. The SWPPP shall also describe construction-phase housekeeping measures to be implemented, such as use of water-tight dumpsters to store solid wastes; storage of construction materials in designated areas, covered and with secondary containment, as appropriate; and practices to prevent pollutant discharge from vehicle and equipment fueling and cleaning.</p> <p>The project shall be required to fully implement the SWPPP and the City Public Works Department shall monitor these measures during project construction.</p> <p><i>HYD-1.4 Construction Dredging.</i> Prior to construction, the City</p> | |

SU = Significant and Unavoidable PS = Potentially Significant LTS = Less than Significant NI = No Impact

Table S-1
Summary of Impacts and Mitigation Measures

| Impacts | Impact Significance Without Mitigation | Mitigation Measures | Impact Significance With Mitigation |
|---|---|------------------------|--|
| <p>shall apply to BCDC, the DMMO, the Army Corps and the Regional Board for permits to fill and dredge within the lagoons and at the tide tube outlet into the Bay. The applications must contain an Operation Plan for the project implementation stage that includes water quality protection to prevent exceedance of water quality objectives, including objectives for turbidity, total dissolved solids, dissolved oxygen, pH, oil and grease, and toxicity. In addition to specific BMPs stipulated by a dredging permit, the operation plan must provide for (a) use of machinery that has been power-washed and cleaned of all debris, oils, etc. prior to entry into the lagoons, (b) curtain-type floating barriers or similar means to prevent release of disturbed materials from the dredging zone and into lagoon areas not being dredged, (c) appropriately engineered dredged-sediment temporary dewatering facilities which prevent the release of dredged material effluent (decant water) collected during dewatering from entering the lagoons, Bay or City storm drainage infrastructure, and (d) a plan to re-use or dispose of dredged sediments and water consistent with their quality.</p> | | | |
| | | | |
| | | | |
| HYD-2 Operation of the Preferred Project would not violate water quality standards or waste discharge requirements (i.e., as established by the San Francisco Bay RWQCB). | LTS | No Mitigation Required | N/A |
| HYD-3 The Preferred Project would not substantially deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been | NI | No Mitigation Required | N/A |

SU = Significant and Unavoidable PS = Potentially Significant LTS = Less than Significant NI = No Impact

Table S-1
Summary of Impacts and Mitigation Measures

| Impacts | Impact Significance Without Mitigation | Mitigation Measures | Impact Significance With Mitigation |
|---|---|---|--|
| <p>granted).</p> <p>HYD-4 The Preferred Project would alter the existing drainage pattern of the project site and surrounding area, and would increase the amount of circulation within the Aquatic Park lagoon system, which could result in erosion or siltation on- or off-site.</p> | PS | <p><i>HYD-4.1 Sediment Deposition Monitoring and Dredging Plan.</i> As part of the application for dredging permits, the City shall include a sediment deposition monitoring and dredging plan (plan) to manage the lagoons consistently with the habitat and resource management goals set forth in the Project Description. Post-construction sediment deposition monitoring could be as simple as establishing several monitoring points where depth to sediment would be measured on a pre-determined schedule. The monitoring plan shall be consistent with the dredging management permit conditions resulting from implementation of Mitigation Measure HYD-1.4 (Construction Dredging). A performance standard/threshold for determining the need for further dredging shall be established as part of the plan. If further dredging is required, then the City shall first apply for coverage as a “small dredger” through the Small Dredger Programmatic Alternatives Analysis program⁴ specifically established by state and federal agencies to expedite permitting of routine, small maintenance dredging at waterfront sites in San Francisco Bay.</p> | LTS |
| <p>HYD-5 The Preferred Project could result in flooding on- or off-site.</p> | PS | <p><i>HYD-5.1 Tidal Flooding Control.</i> As the project develops further, additional modeling shall be completed to assess how other tidal events (e.g., the 100-year tide) and refinements to design features (i.e. expanded gate controls) would affect water surface elevations across all of the basins. The tidal modeling results will provide the City of Berkeley with operational-scale detail on how best to operate the slide gates to prevent flooding from high-tide events. The City shall operate the slide gates based on the results of this tidal modeling and shall monitor the automated system water surface elevation data to ensure</p> | LTS |

⁴ U.S Army Corps of Engineers, U.S. Environmental Protection Agency, San Francisco Bay Conservation and Development Commission, San Francisco Bay Regional Water Quality Control Board, 2004, Small Dredger Programmatic Alternatives Analysis (SDPAA) for Disposal of Maintenance Dredged Material in the San Francisco Bay Region, Oct. 28, 2004, 14 p.

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Table S-1
Summary of Impacts and Mitigation Measures

| Impacts | Impact Significance Without Mitigation | Mitigation Measures | Impact Significance With Mitigation |
|---|---|---|--|
| | | operational parameters are being achieved to verify that that the Preferred Project is being operated in a manner that does not worsen tidal flooding in Aquatic Park as a result of tidal conditions in the Bay. | |
| HYD-6 The Preferred Project would have the potential to create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems. | PS | <i>HYD-6.1 Watershed Management Plan:</i> Potter Watershed Improvements. Implement the Potter watershed improvement projects identified in the City's Watershed Management Plan. [The feasibility of this mitigation measure is addressed in Impact HYD-6.] | SU |
| HYD-7 The Preferred Project would not otherwise degrade water quality. | NI | No Mitigation Required | N/A |
| HYD-8 The Preferred Project would not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary of Flood Insurance Rate Map or other flood hazard delineation map. | NI | No Mitigation Required | N/A |
| HYD-9 The Preferred Project would not place within a 100-year flood hazard area structures that would impede or redirect flood flows. | LTS | No Mitigation Required | N/A |
| HYD-10 The Preferred Project would not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. | NI | No Mitigation Required | N/A |
| HYD-11 The Preferred Project could expose people or structures to substantial risk of inundation by sea level rise. | PS | <i>HYD-11.1</i> Implement Mitigation Measure 5.1 (Tidal Flooding Control). | LTS |

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Table S-1
Summary of Impacts and Mitigation Measures

| Impacts | Impact Significance Without Mitigation | Mitigation Measures | Impact Significance With Mitigation |
|---|---|------------------------|--|
| HYD-12 The Preferred Project would not expose people or structures to substantial risk of inundation seiche, tsunami or mudflow. | LTS | No Mitigation Required | N/A |

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Section 2

Introduction

2.1 PURPOSE OF THIS ENVIRONMENTAL IMPACT REPORT

This Draft Environmental Impact Report (EIR) for the Aquatic Park Improvement Program (APIP) has been prepared by the City of Berkeley (City) Department of Parks, Recreation, and Waterfront, which is the lead agency for the Preferred Project, in conformance with the provisions of the California Environmental Quality Act (CEQA) Guidelines, as amended.¹ The lead agency is the public agency that has the principal responsibility for carrying out or approving a project.

This Draft EIR assesses potentially significant impacts that could result from the Preferred Project. As defined in the CEQA Guidelines Section 15382, a “significant effect on the environment” is:

... a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant.

As stated in the CEQA Guidelines, an EIR is an “informational document” intended to inform public agency decision-makers and the public of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project. The Berkeley City Council will consider this Draft EIR in reviewing the Preferred Project and making the final decision to certify the Final EIR (responses to comments) and to approve or deny the Preferred Project.

The City must consider the information in the Draft and Final EIR and, particularly, each significant impact resulting from the Preferred Project. The City will use the EIR, along with other information in the public record, to determine whether to approve, modify, or disapprove the Preferred Project, and to specify any applicable environmental conditions or mitigation measures as part of the Preferred Project approvals. The purpose of this Draft EIR is to provide the City, responsible and trustee agencies, other public agencies, and the public with detailed information about the environmental effects of implementing the Preferred Project, to examine and institute methods of mitigating any adverse environmental impacts should the Preferred Project be approved, and to consider feasible alternatives to the Preferred Project.

¹ California Governor's Office of Planning Research. *CEQA, California Environmental Quality Act, Statutes and Guidelines*, Guidelines as amended January 1, 2012.

2.2 EIR PROCESS

Notice of Preparation

The Notice of Preparation (NOP) was initially released for the Preferred Project on June 24, 2009, for a 35-day public review period. A public scoping meeting was held on July 9, 2009, by the lead agency. The NOP noted that the Preferred Project may have a significant effect on the environment and that an EIR would be prepared for the Preferred Project.

The NOP was then recirculated on October 19, 2011, in order to solicit additional comments that may have arisen since circulation of the initial NOP. The second NOP was released for a 33-day public review period. During the second public review period, two public scoping meetings were held to solicit comments on the scope of the Draft EIR. The first meeting was held on October 24, 2011, before the Parks and Recreation Commission (P&RC), and the second public meeting was held on November 16, 2011. Copies of the initial and recirculated NOP are provided in Appendix A of this Draft EIR.

Both the original and recirculated NOP were posted on the City's website and sent to individuals, local interest groups, adjacent property owners, and responsible and trustee State and local agencies having jurisdiction or interest over environmental resources and/or conditions in the vicinity of the project site. The purpose of the NOP was to allow various private and public entities to transmit their concerns and comments on the scope and content of the Draft EIR, focusing on specific information related to each individual's or group's interest or agency's statutory responsibility early in the environmental review process.

In response to the NOP (original and recirculated), letters were received from the following agencies:

- San Francisco Bay Regional Water Quality Control Board
- California Department of Transportation
- Department of Parks and Recreation – Diablo Vista District
- East Bay Regional Park District
- Association of Bay Area Governments – Bay Trail Project

In addition, six letters were received from individuals and organizations, and nine members of the public made oral comments at the Draft EIR scoping meeting held on July 19, 2009. Twelve letters were received from individuals and organizations were received in response to the recirculated NOP, and a total of 15 members of the public made oral comments at the scoping meetings held on October 24, 2011, and November 16, 2011. Copies of these NOP comment letters are included in Appendix A of this Draft EIR.

Scope of Draft EIR

The NOP indicated that the following environmental topics would be addressed in detail in the Draft EIR:

- Biological Resources
- Hydrology and Water Quality

The Preferred Project would not result in significant environmental impacts on aesthetics, agriculture and forest resources, air quality, cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, mineral resources, noise, population and housing, public services, transportation, and utilities and service systems. A detailed analysis of these topics is, therefore, not included in the Draft EIR; however, these topics are briefly discussed in Section 6, Other CEQA Considerations, under the heading “Impacts Found to Be Less Than Significant.”

Draft EIR and Public Review

This Draft EIR provides an analysis of physical impacts anticipated to result from the Preferred Project. Where significant impacts are identified, the Draft EIR recommends feasible mitigation measures to reduce or eliminate the significant impacts and identifies which significant impacts are unavoidable. Alternatives to the Preferred Project are also presented (Section 5). This environmental document is considered a draft under CEQA because it must be reviewed and commented upon by public agencies, organizations, and individuals before being finalized.

This Draft EIR is being distributed for a minimum of a 45-day public review and comment period, beginning November 8, 2012, and ending December 28, 2012. Readers are invited to submit written comments on the document (e.g., does this Draft EIR identify and analyze the possible environmental impacts and recommend appropriate mitigation measures? Does it consider and evaluate a reasonable range of alternatives?). Comments are most helpful when they suggest specific alternatives or measures that would better mitigate significant environmental effects. Written comments should be submitted by December 28, 2012, to:

City of Berkeley
 Department of Parks Recreation and Waterfront
 Attention: Deborah Chernin
 1947 Center Street, First Floor
 Berkeley, CA 94704
 DChernin@CityofBerkeley.info

The P&RC will hold two public hearings to take oral comments on the Draft EIR: Monday, December 3, 2012, at its regular meeting at 7:30 p.m. at Frances Albrier Center at San Pablo Park, 2800 Park Street, Berkeley, California; and Wednesday, December 12, 2012, from 7:00 p.m. to 8:30 p.m. at James Kenney Community Center (Community Room, 2nd Floor), 1720 Eighth Street, Berkeley, California. Hearing notices will be mailed to responsible agencies and interested individuals.

Final EIR and Project Approval

Following the close of the public review period, the City will prepare responses to all relevant comments that relate to potential physical changes to the environment as a result of implementing the Preferred Project. The Draft EIR, along with the responses to the comments on relevant environmental issues received during the review period, will comprise the Final EIR and will be considered by the City Council in making the decision to certify the Final EIR and to approve or deny the Preferred Project.

Certification of the Final EIR by the City Council as complete and adequate in conformance with CEQA does not grant any land use approvals or entitlements for the Preferred Project. The merits of the Preferred Project will be considered by the City Council in tandem with review of the Final EIR. The CEQA Guidelines require that, for one or more significant unavoidable impacts that cannot be substantially mitigated, the lead agency must prepare a Statement of Overriding Considerations in which the lead agency balances the social, economic, technological, and legal benefits of approving a project against the significant and unavoidable environmental impacts which would result from project implementation. This Statement of Overriding Considerations must be approved by the City Council in order for the Preferred Project to be approved.

2.3 USE OF THIS REPORT

An EIR is an informational document whose purpose is to make the public and decision-makers aware of the environmental consequences of a project. The surrounding residents and businesses and any other interested individual may review the EIR to evaluate the Preferred Project's effects on baseline conditions, especially water quality, stormwater management, and aquatic habitat, and the proposed mitigation measures to reduce potential environmental consequences. As noted above, the City must consider the information in the Draft and Final EIR and, particularly, each significant impact resulting from the Preferred Project. The City will use the EIR, along with other information in the public record, to determine whether to approve, modify, or disapprove the Preferred Project, and to specify any applicable environmental conditions or mitigation measures as part of the Preferred Project approvals.

Various City departments will also review this EIR to understand the Preferred Project's service demands, permit requirements, and mitigation obligations. For example, the City's Public Works Department will review the project's effect on the City's storm drain system. Section 3.7 of this EIR lists permits that would be needed to implement the Preferred Project.

Other public agencies besides the lead agency also have discretionary approval over the project. These agencies, known as "responsible agencies," will also review the EIR and may comment during the public review period. A list of these agencies is provided in Section 3.8 of this EIR under the heading "Responsible Agencies".

2.4 REPORT ORGANIZATION

This Draft EIR is organized into the following sections:

- *Section 1 – Summary:* Provides a summary of the Preferred Project and of the impacts that would result from its implementation, describes mitigation measures recommended to reduce or avoid significant impacts, and identifies alternatives to the Preferred Project.
- *Section 2 – Introduction:* Discusses the overall Draft EIR purpose, provides a summary of the Preferred Project and the Draft EIR scope, and summarizes the organization of the Draft EIR.
- *Section 3 – Project Description:* Provides a description of the project site, site development, project objectives, required approval process, and details of the Preferred Project itself.
- *Section 4 – Environmental Analysis:* Describes the existing conditions (setting), environmental impact assessment, and mitigation measures for each environmental technical topic.
- *Section 5 – Alternatives:* Provides an evaluation of two alternatives to the Preferred Project in addition to the No Project alternative.
- *Section 6 – Other CEQA Considerations:* Provides additional specifically-required analyses of the Preferred Project's effects, significant irreversible changes, cumulative impacts, and effects not found to be significant.
- *Section 7 – List of Preparers:* Provides a list of all individuals and agencies responsible for preparation of the EIR.
- *Section 8 – References:* Provides a list of references cited in the EIR.

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Section 3

Project Description

3.1 OVERVIEW OF THE ENVIRONMENTAL SETTING

This section provides an overview of the project site's regional and local setting. Additional detail concerning the project site's biological and hydrologic setting is included in the environmental setting discussions contained within Section 4.2, Biological Resources, and Section 4.3, Hydrology and Water Quality, respectively.

Regional Setting

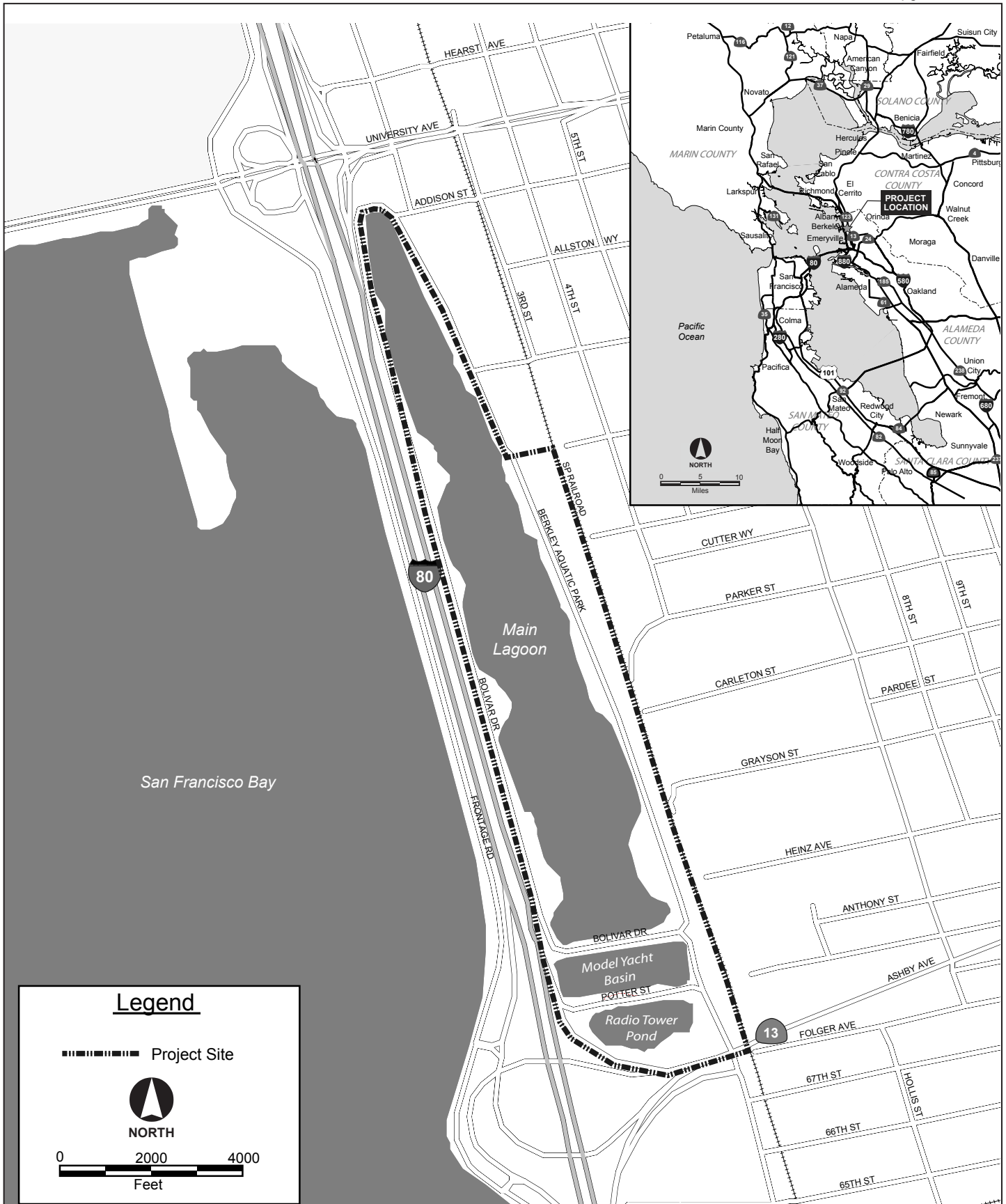
The project site is located in the San Francisco Bay Area within the City of Berkeley (see Figure 3-1). The project site is adjacent to the eastern shore of the San Francisco Bay (Bay), directly east of the Golden Gate Bridge. Regional access to the site is provided by Interstate 80/580 (Interstate 80), which forms the western boundary of the site and separates it from the Bay, and State Route 13 (Ashby Avenue), which forms the southern boundary of the site. University Avenue provides access to the project site from the north. The Union Pacific Railroad tracks, which are also used by Amtrak and regional commuter trains, border the site on the east. The site is located approximately seven miles northeast and four miles northwest of the downtown areas of San Francisco and Oakland, respectively.

Local Setting

The project site consists of Aquatic Park, which is owned and operated by the City of Berkeley, and is located on the City's western edge. Aquatic Park encompasses 102 acres and includes three separate lagoons, totaling 68 acres. From north to south, the three lagoons within Aquatic Park are the Main Lagoon (the largest, at 58.3 acres), the Model Yacht Basin (5.0 acres), and the Radio Tower Pond (4.7 acres).¹ The lagoons support a variety of wildlife, including fish, invertebrates, and birds. The Park consists of 68 acres of aquatic habitat in the three lagoons, 0.7 acre of salt/brackish wetland, 1.1 acres of freshwater wetland, 11 acres of lawn, 7 acres of roads and trails, and 14 acres of buildings and uplands. Aquatic Park has been developed to support various forms of recreation and now contains, in addition to the three lagoons, areas of turf and landscaping, roads, native vegetation, and various recreation areas. The Park is used by City residents and visitors for active recreation such as waterskiing, rowing, kayaking, bicycling, hiking, and bird watching. The Park also contains a disc golf course and a children's playground.

The project site comprises the following Assessor's Parcel Numbers (APNs): 60-2521-3-1, 60-2513-1-1, 60-2507-1-1, 60-2507-1-2, and 60-2507-3-1. The existing General Plan land use designation for the project site is Open Space and Waterfront/Marina and the existing zoning is U (Unclassified). Surrounding zoning designations include commercial and mixed-use light industrial to the north; mixed

¹ The southern half of Radio Tower Pond is privately owned. In order to include this privately owned land within the project, the City would enter into a licensed agreement with the property owner.



Source: Precision Mapping Street and Traveler 8, 2009.

FIGURE 3-1
Regional and Project Vicinity Map

use light industrial to the south; and commercial, mixed manufacturing, mixed-use residential, and mixed-use light industrial to the east. Aside from the highway corridors that border Aquatic Park on the west and south, adjacent properties to the north and east (across the embankment supporting the railroad tracks) are developed with light industrial, manufacturing, and commercial uses.

Physical Setting

The California Division of Highways created Aquatic Park in the mid-1930s as part of the construction of the Eastshore Highway, a Works Progress Administration (WPA) project that was intended to provide a new alignment for transcontinental US Highway 40 (US 40), which had previously run along San Pablo Avenue. The area that is now Aquatic Park was used as a “borrow area” to obtain fill for the freeway construction. The choice of alignment for the new segment of US 40 cut off a portion of the Bay, and the isolated section of the Bay that resulted from the placement of the fill necessary to support the highway became the three lagoons that exist today within Aquatic Park.² In the early 1950s, the Eastshore Highway was significantly expanded into a full limited-access freeway with connecting ramps and overpasses. This construction activity significantly widened the highway right-of-way through the placement of additional fill. The new freeway was incorporated into the newly designated Interstate 80 in the late 1950s and has been upgraded and expanded only modestly during the decades since its original conversion to a freeway.

The Main Lagoon, Model Yacht Basin, and the Radio Tower Pond lagoons are connected to San Francisco Bay primarily through a series of 24-inch culverts or tide tubes located beneath Interstate 80, as shown in Figure 3-2. The pipe sections forming the tide tubes near Bird Island are separating in the surf zone on the Bay side and failing riprap and parts of the pipes are occluding flows into several of the tide tubes, thus reducing the amount of tidal inflow reaching the Main Lagoon. The Model Yacht Basin tide tube is buried in sand on the Bay side. The Radio Tower Pond tide tube has collapsed under the frontage road and appears to have separated on the Bay side.

Hydrology

Aquatic Park receives both stormwater from the Strawberry, Potter, and local watersheds and tidal water from the San Francisco Bay. There are a total of nine connections³ in the lagoon circulation system (see Figure 3-2). The flow of water into and out of the lagoon system varies by tide and season. During the summer months, water enters the lagoons from San Francisco Bay through the series of tide tubes that cross under Interstate 80 as described above. During the winter months, both tidal water and stormwater can enter the lagoons.

The lagoons receive tidal flushing from Bay water entering each lagoon through the tide tubes and the storm drain located between the Model Yacht Basin and Radio Tower Pond (Potter Street storm drain). As noted above, the tidal infrastructure within Aquatic Park is deteriorating. Due to the small size of the tide tubes, their current condition, and their elevation, the average daily tidal range in the lagoons is very small

² Prior to the 1930s, the eastern edge of the present-day lagoons was the San Francisco Bay shoreline.

³ Connections consist of lagoon-to-storm-drain connections, lagoon-to-lagoon connections, and/or lagoon-to-Bay connections. Table 4.3-1 in Section 4.3, Hydrology and Water Quality, summarizes the characteristics of each connection.



Source: Aquatic Park Improvement Program, 2008 and Google Earth Pro, 2009.

FIGURE 3-2
Aerial Photograph

(less than 0.2 foot). The lowest tidal elevation acceptable in each lagoon is defined by the elevation of the tide tubes or storm drain that drains the lagoon and, in the Main Lagoon, navigational hazards that would be exposed at low tide. In addition, each lagoon has shoreline buildings and roadways or other facilities that limit the allowable highest-tide elevation.

A large portion of Berkeley and parts of Oakland drain towards Aquatic Park. The majority of this runoff drains into the Potter Street storm drain or the Strawberry storm drain (see Figure 3-2). As noted above, the Potter Street storm drain crosses the southern portion of Aquatic Park between the Model Yacht Basin and Radio Tower Pond. The Strawberry storm drain is located a short distance to the north of the north end of the Park. Each of these storm drains is connected to one of the lagoons in the Park via a smaller drain culvert. The Strawberry storm drain is connected to the Main Lagoon at its north end and the Potter Street storm drain is connected to the Model Yacht Basin on its south side. Although the Potter Street storm drain connection allows tidal inflow from the Bay to pass into the Model Yacht Basin as well as stormwater inflow, the Strawberry storm drain connection generally only allows stormwater inflow to pass through to the Main Lagoon. Although the Strawberry storm drain outlets to the Bay, a weir located within the connecting culvert to the Main Lagoon prevents tidal inflow from reaching the lagoon. During high runoff periods, generally during the winter months, stormwater enters the lagoons from these two drains. In addition to the regional stormwater inflow from these two main storm drains, most of the watershed area immediately east of the Park drains directly into the Main Lagoon through a set of seven local storm drains and as overland runoff.

Habitat

The primary type of habitat in Aquatic Park is shallow sub-tidal aquatic habitat in the three lagoons (68 acres total). Aquatic Park is located adjacent to central San Francisco Bay, which has the most ocean-like conditions of any area of the Bay. There are a number of schooling “bait” fish that are typically very abundant in the central Bay and are also found in lagoons similar to Aquatic Park, such as Lake Merritt and the tidal lagoon at the Oakland Airport. Some of these “bait” fish were observed in the Aquatic Park lagoons, including top smelt and various species of goby. These small fish are a major food source to diving ducks such as scaups, buffleheads, surfscoters, and grebes that over-winter in San Francisco Bay and Aquatic Park. Wading birds—egrets and herons, as well as pelicans, cormorants, mergansers, and other fish-eating birds—also feed on the small fish. Aquatic Park supports a variety of wintering water birds. These birds are mostly fish eaters who use the lagoons in winter when water temperatures are cool and small fish are most likely to inhabit the lagoons. Data collected in June and September 2004 through the San Francisco Bay Regional Water Quality Control Board’s (RWQCB) Surface Water Ambient Monitoring Program (SWAMP) show high water temperature and low dissolved oxygen levels in the lagoons, which likely limits fish survival during the summer months. Large algal blooms and foul odors are also typical conditions in the lagoons in the summer and fall due to very low water circulation and poor water quality.

The three lagoons also contain small areas of salt/brackish wetland (0.7 acre total). The steep slopes and small average tidal range of the lagoons limit the area for salt/brackish marsh to small pockets along the shoreline of the Main Lagoon and Model Yacht Basin. The Radio Tower Pond has the largest area of salt/brackish marsh along its western edge. At the outlets of the local storm drains on the eastern shoreline

of the Main Lagoon, brackish marsh plants grow in pockets. In addition to these pockets, individual high marsh plants grow in the rock riprap of the lagoon shorelines, especially in the Main Lagoon. These wetlands in the Main Lagoon do not provide much wildlife habitat due to their small size and proximity to active recreation uses. There are intertidal mudflats in several locations where inundation periods are too lengthy for salt marsh plant species to establish. The Main Lagoon has a non-vegetated intertidal flat adjacent to the Rowing Club and the Radio Tower Pond also has a large intertidal flat. All three lagoons have Monterey cypress planted near the shoreline. These cypresses are used for roosting by various species of herons and egrets.

There are six small freshwater wetlands on the eastern border of the Park adjacent to the railroad berm (1.1 acres total). Several of these wetlands have small amounts of year-round water draining into the Main Lagoon. The freshwater wetlands have mostly saturated muddy soils with wetland plants. Most of the wetlands at Aquatic Park have dense cattails or tules due to the soggy soil conditions. Grass areas next to the freshwater wetlands are also often saturated. Many features of Aquatic Park's freshwater wetlands greatly reduce their value as wildlife habitat, such as immediately adjacent active recreation areas, homeless encampments, and significant infestations of invasive nonnative plants.⁴

Upland areas in Aquatic Park include lawn areas, pathways, roads, currently used and abandoned parking areas, non-wetland edges of the lagoons, and both derelict and currently used buildings. These areas cover approximately 25 acres of the Park.

Recreational Infrastructure

The majority of recreation facilities are along the eastern side of the Park. The western side of the Main Lagoon contains an asphalt access road and a series of asphalt parking areas. The Waterskiing Club and Rowing Club each have facilities on the western side of the Main Lagoon. Another upland area is Bird Island, located in the west-central part of the Main Lagoon. A building used by the Waterskiing Club is located on Bird Island. The elevation of Bird Island is low and the island floods during large storms. Roads, including an on-ramp to Interstate 80, parking, and areas of ornamental plantings border the Model Yacht Basin and Radio Tower Pond. Homeless encampments exist at many locations in the upland areas of the Park.

3.2 PROJECT OBJECTIVES

The objectives of the Preferred Project are as follows:

- Improve water quality and habitat at Aquatic Park while maintaining the balance of recreational uses and habitat areas.
- Eliminate or reduce inflow of stormwater to Aquatic Park lagoon system to the extent feasible, consistent with objective 1, above.

⁴ Laurel Marcus & Associates and Hydrologic Systems, Inc. *Aquatic Park Improvement Program Technical Report*. Prepared for The City of Berkeley Department of Parks Recreation & Waterfront, March 2008.

- Improve park aesthetics.
- Maximize eligibility for funding by outside sources for implementation of the APIP improvements.
- Comply with all current codes and standards, regulations, orders, and policies.
- Avoid increases in upstream flooding.

3.3 PROJECT BACKGROUND

Aquatic Park Improvement Program (APIP)

The City of Berkeley has completed several planning efforts for Aquatic Park. In 1990, a Draft Master Plan was prepared that identified enhancing natural resources and improving water quality as major goals. The Aquatic Park Natural Resource Management Study (NRMS) was prepared in 2003. The NRMS recommended improving water quality in the three lagoons by increasing water circulation, primarily through better tidal exchange, and improving wetland habitat areas. A limited amount of hydrologic modeling and data collection was completed for the study. In 2006, the City began the process of preparing the Aquatic Park Improvement Program (APIP), which included concept-level designs for the major recommendations in the NRMS.⁵ A consultant team of Laurel Marcus & Associates (LMA) and Hydrologic Systems, Inc. (HSI) completed studies and analyses for the APIP. The Aquatic Park Subcommittee of the Berkeley Parks & Recreation Commission (P&RC) oversaw the development of the APIP. The consultant team attended over 25 meetings with the Aquatic Park Subcommittee, City staff, and various stakeholders and interested parties. The consultant team completed the following tasks during preparation of the APIP:

Data Collection and Analysis

- Site topographic surveys were completed of the shoreline and upland areas.
- Elevations and dimensions were measured for storm drains, tide tubes, and other pertinent structures at key locations in the park. The structural integrity (condition, wall thickness, rebar location, geometry) of the tide tubes and storm drains was surveyed.
- Tidal cycles were monitored in the lagoon system.
- The watershed area or drainage basin of each storm drain was delineated.
- Digital field mapping of salt/brackish wetlands, freshwater wetlands, and nonnative invasive plant species was completed.

⁵ The Natural Resource Management Study (NRMS) and the Aquatic Park Improvement Program (APIP) Technical Report are available for review Monday through Friday between the hours of 8:30 am and 4:00 p.m. at the City of Berkeley, Parks Recreation and Waterfront Administration Office, 2180 Milvia Street, 3rd Floor, and the City of Berkeley, Recreation Offices, 1947 Center Street, 1st Floor. The documents are also available online by clicking the APIP link on the City's Parks Recreation and Waterfront website: <http://www.ci.berkeley.ca.us/parks>.

- Studies of water bird use of the Main Lagoon were reviewed.
- Water quality and fisheries data were collected for both Aquatic Park and the Bay shallows nearest to the park.
- A use area/protection area analysis was created for the park.
- Design guidelines were drafted for the APIP.

Concept Design

- A hydrologic model of the watershed feeding into Aquatic Park was created and a series of different storm events was analyzed.
- A hydraulic model of the lagoon system and its tide tubes/storm drains was created. Fourteen different alternatives were evaluated for changing lagoon hydrology based on the model data and results. These included making major changes to the Strawberry storm drain overflow, such as actuated slide gates to block stormwater inflow and enlarging the storm drain connection.
- A concept-level design (25 percent) was prepared for the recommended hydrologic alternative including location sizes, structure types, elevations, materials, and costs for all new connections, gates and other changes.
- Concept-level maps and descriptions of shoreline revegetation areas, invasive plant removal, wetland creation, and wildlife protection measures associated with hydrologic improvements to the lagoons were prepared.
- Concept-level maps and descriptions of invasive nonnative plant eradication sites throughout the Park and revegetation measures were prepared.
- The ability to use the existing freshwater wetlands to serve as biofilters for inflowing stormwater was analyzed. Also evaluated were deepening, revising inflow and outflow conditions, revegetation, and maintenance needs.
- Concept design was prepared for revegetation and improvement of Bird Island to benefit roosting birds.
- The western area of the park was reviewed for opportunities to remove existing asphalt and replant with native species.
- Steps were identified to create a new tidal wetland at the Rowing Club site.
- Concept-level cost estimates were prepared for the components of the Concept Design.

The consultant team also identified potential environmental impacts resulting from the implementation of the program alternatives and information needed to fully evaluate the environmental effects of the concept design. In addition to these tasks, HSI completed an analysis of the lagoon system to evaluate stormwater residence time in the lagoons under existing conditions and under the recommended alternative. LMA completed an analysis of potential watershed best management practices (BMPs) and biofilter improvements to reduce urban contaminants reaching the lagoons during rainstorms. Additional detail on

the constraints and opportunities analyses that were conducted in order to arrive at the components of the concept design is presented below.

Constraints and Opportunities Analysis

The consultant team identified a series of factors that currently act as constraints affecting water quality, tidal exchange, and habitat quality in Aquatic Park. These constraints must be overcome to at least some degree in order to achieve the project objectives. The team also identified a series of opportunities available for improving current water quality, tidal exchange, and habitat quality in Aquatic Park. Each of these opportunities represents a potential solution to at least some of the problems created by the identified constraints. This analysis was undertaken in order to lay the groundwork for the formulation of a preferred hydrology and habitat improvement project alternative. The constraints and opportunities were allocated among six categories: tidal hydrology, shallow subtidal aquatic habitat and water quality, salt/brackish wetland and shoreline habitat, upland and bird roosting habitat, watershed hydrology and urban stormwater, and freshwater wetlands.

Tidal Hydrology

Constraints. The current connections to San Francisco Bay limit tidal water from entering the lagoons. The existing tide tubes are over 70 years old and are deteriorating and collapsing. However, it would be expensive and likely infeasible to install new tide tubes under Interstate 80. Larger connections to the existing storm drains, if not managed correctly, could allow more stormwater into the lagoon system. The additional stormwater would temporarily reduce the salinity and may increase the amount of pollutants entering the lagoon. Constructing new storm drain connections would be complicated because the existing openings should remain operational until the new connections are completed. The presence of buildings and roads on the lagoon shoreline limits the elevation of high tide and the volume of additional bay water that can be let into the lagoon complex. Additionally, the recreational uses of the lagoon limit the low-tide elevation and the volume of tidal water that can be exchanged with the Bay. Further, the lagoons are becoming shallower each year due to continuing siltation.

Opportunities. The connections to the Potter Street and Strawberry storm drains adjacent to the Park could be modified to increase the amount of cooler and more saline water coming into the lagoons from San Francisco Bay. Placing better controls on the Potter Street and Strawberry storm drain connections would provide the ability to block stormwater inflow. This is particularly important for blocking the first flush that occurs during fall and early winter. Larger connections in the Potter Street and Strawberry storm drains would allow for significantly faster removal of any stormwater that does flow into the lagoons. Repair and stabilization of the five main tide tubes would prevent them from totally collapsing and preventing bay water from entering the lagoons. These tide tubes and storm drain connections are essentially the only existing openings through which bay water can enter the Main Lagoon via the Model Yacht Basin. Presently, very little of the tidal flow from the Potter Street storm drain enters the Main Lagoon. Replacing the two 24-inch culverts between the Model Yacht Basin and the Main Lagoon with a larger channel opening would allow additional tide water from the Potter Street storm drain to enter the Main Lagoon. A new channel connection between the Main Lagoon and the Model Yacht Basin would

require less maintenance to keep open than an enclosed pipe connection. The existing culverts require continual maintenance to keep them from getting clogged up with marine growth.

Shallow Subtidal Aquatic Habitat and Water Quality

Constraints. Tidal inflows and water circulation in the Main Lagoon and Radio Tower Pond are currently very limited. The deteriorating tide tubes, if left unimproved, are likely to further reduce inflows into the lagoons. The lagoons experience high water temperatures in the summer and fall due to lack of inflow and water circulation into the lagoons from the Bay. Warm stagnant water conditions increase algal blooms and inhibit most aquatic plant growth, resulting in low dissolved oxygen levels in the lagoons. This, in turn, causes dissolved oxygen levels to drop below the RWQCB's standards in the summer and the fall. Stormwater inflows are retained in the lagoons for several weeks due to limited water circulation, which is possibly allowing contaminants to deposit in the lagoons.

Opportunities. There are two locations, the Potter Street storm drain and the Strawberry storm drain, that can be used to improve the volume of tidal exchange and water circulation in the lagoons. Increasing tidal volume and circulation would reduce stagnant warm water conditions and would increase cold water and dissolved oxygen, creating aquatic conditions more like the central Bay habitats for fish. Increased tidal circulation would remove any stormwater that reaches the lagoons at a much faster rate. Summer/fall bird use includes mallard ducks, double-crested cormorants, Forster's terns, snowy egrets, and shorebirds. According to the 2005 Bird Study (identified in the APIP), these species forage in the Main Lagoon. From October through March, migratory diving ducks, including scaup and bufflehead, use the Main Lagoon as a foraging area. Year-round residents include great blue herons, black-crowned night herons, and great egrets.⁶ Improved aquatic habitat would benefit these species.

Salt/Brackish Wetland and Shoreline Habitats

Constraints. The Main Lagoon and Model Yacht Basin have a very small tidal range. The Main Lagoon's average tidal range is approximately 0.2 foot, and the Model Yacht Basin has an average tidal range of about 1.77 feet. The average tidal range for both lagoons is very small, considering the average for the adjacent San Francisco Bay is 6.61 feet. In their current state, most of the lagoon shorelines are rock-lined and relatively steep or consist of terraces that will not support wetlands. Wind-driven waves also erode the eastern shorelines and could limit the success of wetland creation. Unleashed dogs also present a concern in areas adjacent to the Main Lagoon and Model Yacht Basin, where recreational use is high. Unleashed dogs run along the shoreline and enter the water to chase birds. Although dogs rarely catch any birds, several studies have shown that the constant harassment and resulting stress causes the birds to spend less time eating and resting and, therefore, they may not gain enough weight to successfully over-winter and complete a long migration. Unleashed dogs also deter any nesting by resident ducks or shorebirds. Invasive plants, such as ice plant, cover areas of the shoreline on and near existing and potential wetland sites. Black-crowned night herons roost in the willows in the northeast corner of the Radio Tower Pond and in the cypress along the western shoreline of the Main Lagoon. Homeless encampments, trash dumping, and other activities disturb and degrade shoreline areas, further limiting habitat values.

⁶ Avocet Research Associates. Aquatic Park, Berkeley, California: *Waterbird Population and Disturbance Response Study 2004*. Berkeley, CA: City of Berkeley, 2005.

Opportunities. A wetland could be created by excavating material out of the shoreline in one of several locations. Filling the water area to create wetlands would reduce the tidal prism⁷ and would reduce the volume of water circulating through the lagoon. The western shoreline of the Main Lagoon is not eroded by waves and could support a new wetland. The western portion of the Main Lagoon has a lower level of recreational use. Dogs and people could be restricted through design of vegetative barriers, signs, and fencing. Invasive plants are located on and near existing and potential wetland sites and would need to be eradicated. Certain sites could be graded to create intertidal conditions. Excavated material could be used to create vegetated berms along the edge of a new wetland in order to restrict unleashed dogs as well as for other native plant revegetation areas along the western shoreline. Excavated material could also be used to create a berm around the Radio Transmitter Building in the Radio Tower Pond and to improve Bird Island. Removal of the black-crowned night heron roosting areas in the northeast corner of the Radio Tower Pond and the cypress along the western shoreline of the Main Lagoon should be avoided. Senescent and dead trees could be removed and replaced with cypress seedlings and native vegetation. The northern portion of the eastern shoreline trail could be relocated and the shoreline could be revegetated while retaining the rock walls and riprap to protect against erosion.

Upland and Bird Roosting Habitat

Constraints. The upland areas of Aquatic Park support active recreation including biking, walking, leashed and unleashed dog walking, disc golf, and boat launching. There are limited wildlife species using the upland areas. There are high levels of disturbance and human uses. Homeless encampments, trash dumping, and other activities that disturb habitat occur in upland areas. There are invasive non-native plants in the upland areas. There are a number of derelict and unused buildings in the park. The road between the Model Yacht Basin and Radio Tower Pond is used by a large number of cars as a freeway on-ramp.

Opportunities. Derelict buildings could be restored or removed and un-needed road pavement and parking areas on the western side of the park could be removed and revegetated. Trails along the shoreline could be relocated to reduce disturbance and the shoreline area could be revegetated. Some upland areas could be restored to tidal wetlands or freshwater wetlands. Invasive and dead plants could be removed and natives and non-invasive ornamentals planted.

Watershed Hydrology and Urban Stormwater

Constraints. Aquatic Park is one of the lowest points in Berkeley and thus acts as a receiving area for stormwater flows during large storm events or floods. Stormwater flows into the Main Lagoon from the two major storm drains, although a weir in the Strawberry storm drain connection prevents stormwater from reaching the Main Lagoon unless storm flows are sufficiently high to overtop the structure. Stormwater can also flow into the Main Lagoon from localized storm drains along the eastern edge of the Park. Stormwater also flows directly into the lagoons from several adjacent streets or Park roadways. Urban stormwater flows provide additional nutrients and likely increase algal blooms and subsequently decrease dissolved oxygen levels in the Main Lagoon. Urban stormwater varies in its concentrations of

⁷ A tidal prism is the change in the volume of water covering an area, such as a lagoon, between a low tide and the subsequent high tide.

contaminants over the winter season. The first flush of runoff in the fall/winter typically carries the highest concentration of contaminants. Limited water quality monitoring data exists for the lagoons and for stormwater in the Berkeley area. There is also limited area within the Park available for treating stormwater. Maintenance is a requirement for stormwater treatment facilities.

Opportunities. Within the Park, control structures could be installed at the Potter Street storm drain and Strawberry storm drain connections to limit or eliminate stormwater inflows into the lagoons. Increased water circulation in the lagoon system would remove any stormwater that does reach the lagoons at a much faster rate. Outside of the Park, there are numerous locations in the urbanized watershed that drains directly to the lagoon system that could have biofiltration facilities installed on streets and parking lots. The area along the eastern edge of the railroad berm and the western ends of the City streets could accommodate a series of large vortex filters designed to cleanse stormwater before it enters the park via storm drains. The Aquatic Park watershed area could also be used as a regional demonstration project for integrated urban stormwater treatment, habitat restoration, monitoring, and adaptive management.

Freshwater Wetlands

Constraints. The freshwater wetlands in the Park have shallow ponding and saturated soil conditions encouraging the growth of dense cattails with little vegetative diversity or open water. Water flows are likely from groundwater seeps, and the aesthetics of these wetlands are low. Water flows saturate lawn areas and water from the marshes flows through narrow channels into the lagoons. Expanding these narrow deep channels into wide shallow channels would create more cattails and muddy areas. Invasive ivy is killing some of the willow trees, and other invasive plants are also present. Areas next to freshwater wetlands are used for active recreation involving people and unleashed dogs walking through the marshes, creating a very high level of disturbance and diminishing value for wildlife habitat. There are homeless encampments in the wetlands, which reduces habitat values. Wetlands are not large enough, even if doubled in area, to adequately filter and treat winter stormwater from the storm drains discharging in the Park. Wetlands could possibly filter and treat summer nuisance flows from these drains. Regulations may restrict increasing urban runoff into the wetlands and changing their form and it may be difficult to find funding for changes and improvements to the freshwater wetlands due to the negative effects of the high disturbance levels on habitat values and the small area of the marshes set in a recreational area.

Opportunities. Wetlands could be deepened into ponds so that cattails will not dominate marshes, thus allowing for greater water flow, vegetative diversity, aesthetic appeal, creation of water-isolated and less-disturbed habitat areas, and less maintenance. Habitat for a wider diversity of bird species could be created if vegetation is changed and disturbance is significantly reduced. Freshwater wetlands could be altered and expanded to filter summer nuisance storm drain flows and improve the quality of water entering the Main Lagoon. Currently summer flows either go directly into the Main Lagoon or into the transite pipe and thence to the Potter Street storm drain. Several willow groves in the wetland area support songbirds and could be enhanced. Removal of invasive plants should be an initial step in wetland improvements. The disc golf course would need to be revised and integrated into any changes in the wetlands to reduce incursions and disturbance. Signs, low fencing, and potentially some type of enforcement may be needed to keep dogs and people out of the freshwater wetlands. Changes to the wetlands could reduce saturation of the lawn areas and trails and maintenance needs. However, due to the

limited area suitable for freshwater wetlands and the recreational uses of the park, it is unlikely that freshwater wetlands would be expanded.

3.4 PROJECT CHARACTERISTICS

Background

Based on the data collection, concept design, constraints and opportunities analysis, and model analysis, Alternative 4B was selected as the preferred alternative for the hydrologic component of the APIP. It is important to note that for the purposes of this Draft EIR, Alternative 4B is referred to as Alternative 2: No Additional Stormwater (No Additional SW) alternative. A series of recommendations concerning the habitat improvement components of the APIP were also made. The consultant team's recommendations were documented in the APIP, published in March 2008. Subsequent to the release of the APIP, on January 28, 2008, P&RC identified an alternative model 4B for purposes of environmental review, modified to prevent any stormwater from entering the lagoons via the Potter and Strawberry storm drains. The details of the hydrologic and habitat improvement components of the APIP, as established in the recommendations adopted by P&RC, have been carried forward as "No Stormwater-Unsealed Manholes" (No SW-Unsealed) for which this EIR has been prepared. For the purposes of this Draft EIR the No SW-Unsealed is the Preferred Project.

The No SW-Unsealed and No Additional Stormwater (No Additional SW) alternatives are identical in terms of infrastructure modification and habitat improvement and would only differ in terms of management of stormwater flows into the Aquatic Park lagoons through operation of the slide gates. The No Additional SW alternative is included as a project alternative due to concerns regarding the potential impact additional local flooding if all stormwater from the two main storm drains is prevented from reaching the lagoon system. In addition, a variation of the Preferred Project in which the manholes on the Potter line would be sealed (No SW-Sealed) is also evaluated in this Draft EIR. These two project alternatives are summarized below and are fully analyzed in Section 5, Alternatives.

- **Alternative 1: No Stormwater-Sealed Manholes (No SW-Sealed).** After modeling indicated that implementation of the Preferred Project would likely result in overflows from the Potter line above Aquatic Park, an option identical to the Preferred Project, except that the manholes on the Potter line adjacent to the lagoons would be sealed, was proposed. This alternative is designated as No SW-Sealed.
- **Alternative 2: No Additional Stormwater (No Additional SW).** As described above, the conceptual design recommend in the APIP Technical Report, Alternative 4B, is designated as No Additional SW.

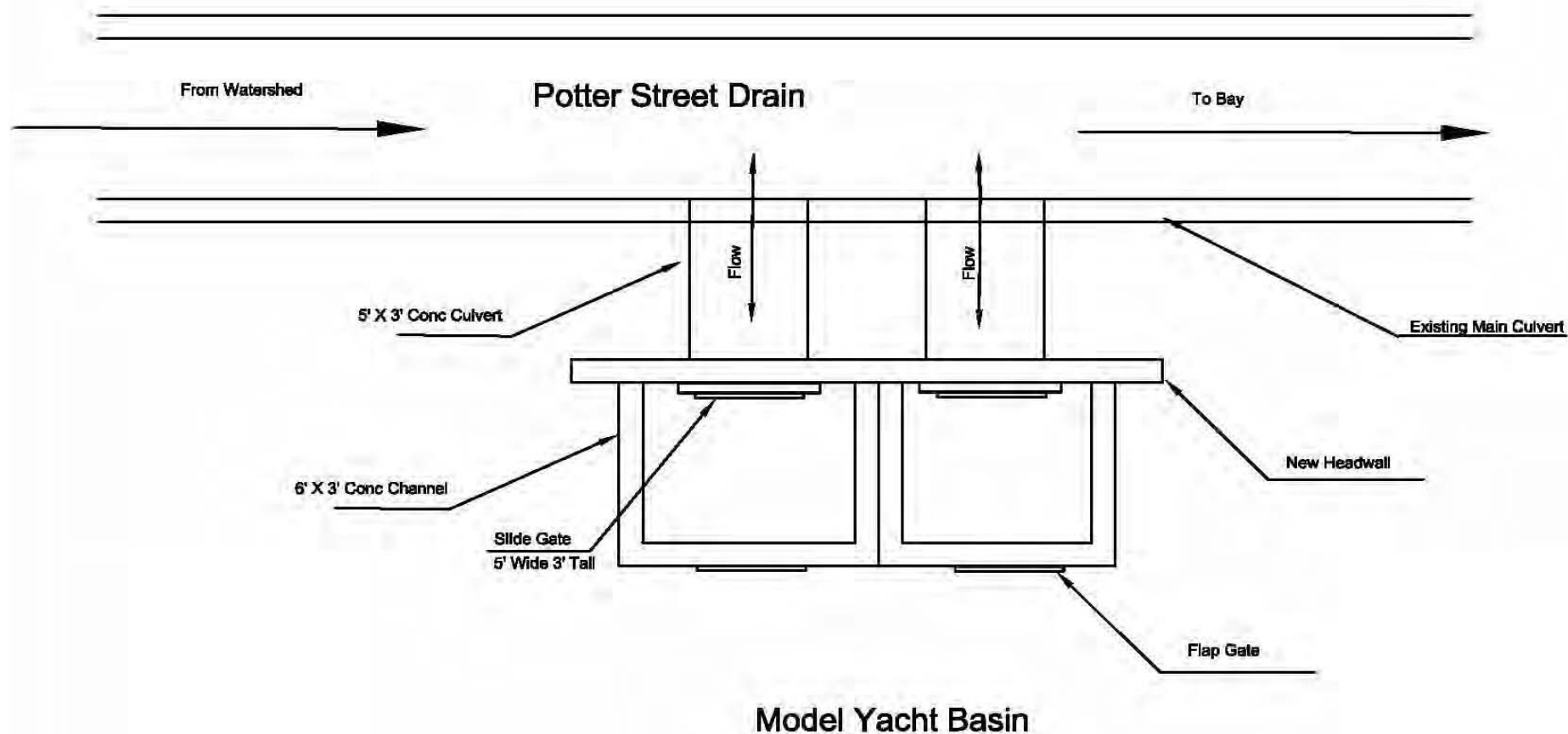
The Preferred Project and the two project alternatives are identical in all respects other than the amount of stormwater inflow that would be allowed to reach the lagoon system from the Potter Street and Strawberry storm drains.

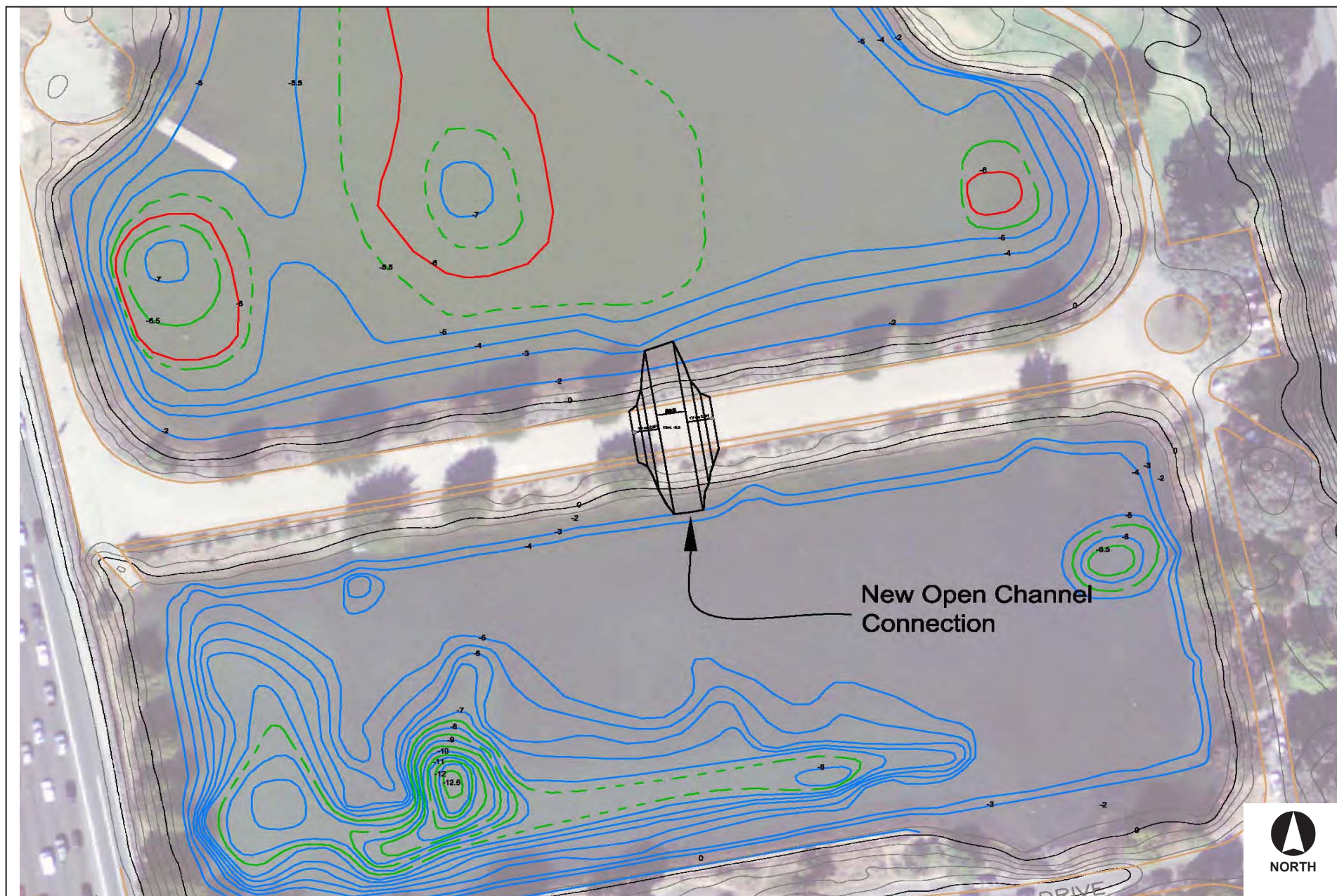
Hydrologic Component

The following hydrologic components are common to the Preferred Project and the two project alternatives.

1. Enlarge the connection between the Potter Street storm drain and the Model Yacht Basin. This connection currently consists of two 24-inch concrete pipes. This connection would be increased to 3-foot by 5-foot box culverts. Figure 3-3 presents a plan view showing a conceptual drawing of the new connection.
2. Construct a 20-foot-wide channel in the berm that separates the Model Yacht Basin from the Main Lagoon by excavating 714 cubic yards of dirt. This berm presently contains two 24-inch concrete pipes. The pipes would be replaced by the open channel connection. A plan view of the proposed connection is shown in Figure 3-4 and Figure 3-5.
3. Modify the Strawberry storm drain connection to allow tidal flow to enter and exit the Main Lagoon. Presently, the connection has a weir that prevents tidal water from entering the lagoon. Only stormwater can enter the lagoon by overtopping the weir. The weir would be removed and replaced with a slide gate. Operation of the slide gate would be similar to that of the actuated slide gate in the Potter Street storm drain connection. A cross-section through the existing connection showing the slide gate and a photograph of the gate looking upstream from the Main Lagoon connection is shown in Figure 3-6. Figure 3-7 presents a plan view showing the layout of the new connection between the Main Lagoon and the Strawberry storm drain.
4. Repair the five main tide tubes that connect the Main Lagoon with the Bay so that the Bay side of the tubes is stabilized and tidal exchange is improved. Presently the Bay side exits are collapsing and the culvert outlets are becoming blocked with riprap and broken pipe debris. A headwall (“retaining wall”) would be constructed at the outlet of each culvert to stabilize the culvert ends and keep the frontage road riprap from blocking the culvert flow. A schematic of the proposed modification to the culvert outlets is shown in Figure 3-8.
5. Install a 12-inch pipe to connect the Radio Tower Pond with the Potter Street storm drain to provide tidal flows from the Bay into and out of the Pond to replace the collapsing tide tube that connects the Radio Tower Pond with the Bay.
6. To prevent stormwater from inflowing to the lagoons, each of the four connection modifications described above would be fitted with a slide gate. These gates would provide the ability to completely eliminate stormwater from entering the lagoon from the Potter Street storm drain and the Strawberry storm drain. It is also recommended that a real-time monitoring station be set up at the different gates, so that the gate position and lagoon level can be monitored by Parks and Public Works staff. This type of system could potentially be set up to deliver data in real time over the Internet.

The Preferred Project and its alternatives differ with regard to operation of the actuated slide gates discussed as the third hydrologic component, above. Under the Preferred Project and No SW-Sealed, the slide gates would remain closed during all storm events to prevent stormwater from entering the Aquatic Park lagoons via the Strawberry and Potter lines. Under the Preferred Project the manhole covers along the up-gradient portion of the Potter line would be left unsealed, and in No SW-Sealed alternative they would be sealed to prevent overflow. Under the No Additional SW alternative, the slide gates on the storm





Source: Hydrologic Systems, Inc. and Laurel Marcus and Associates, February 2008.

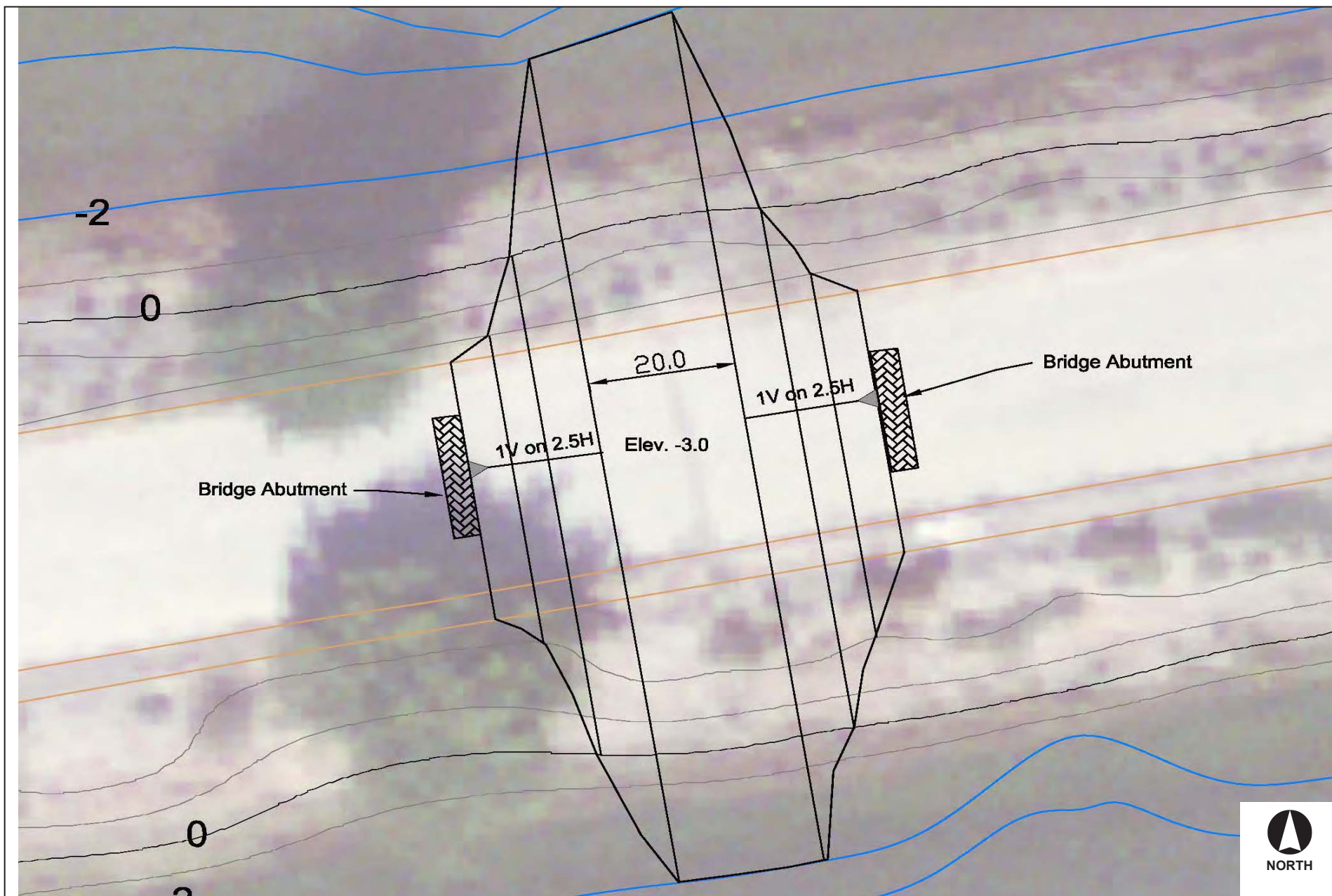
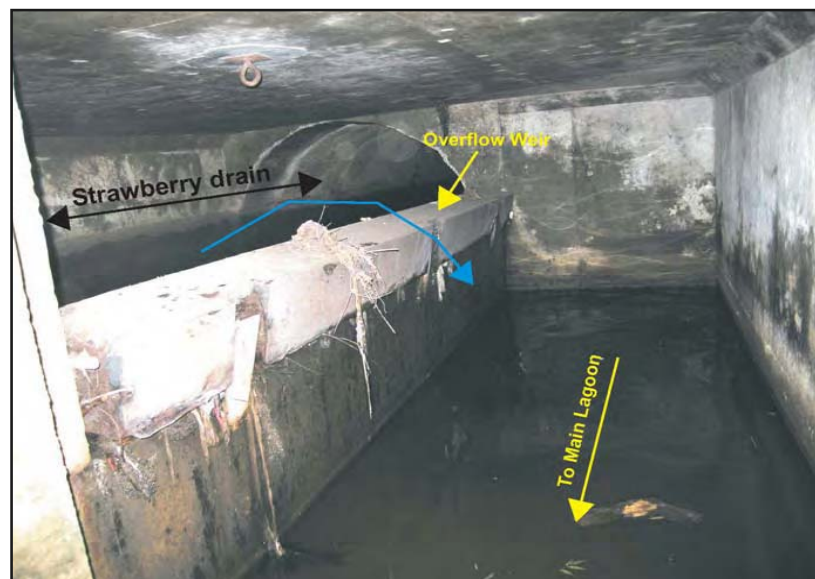
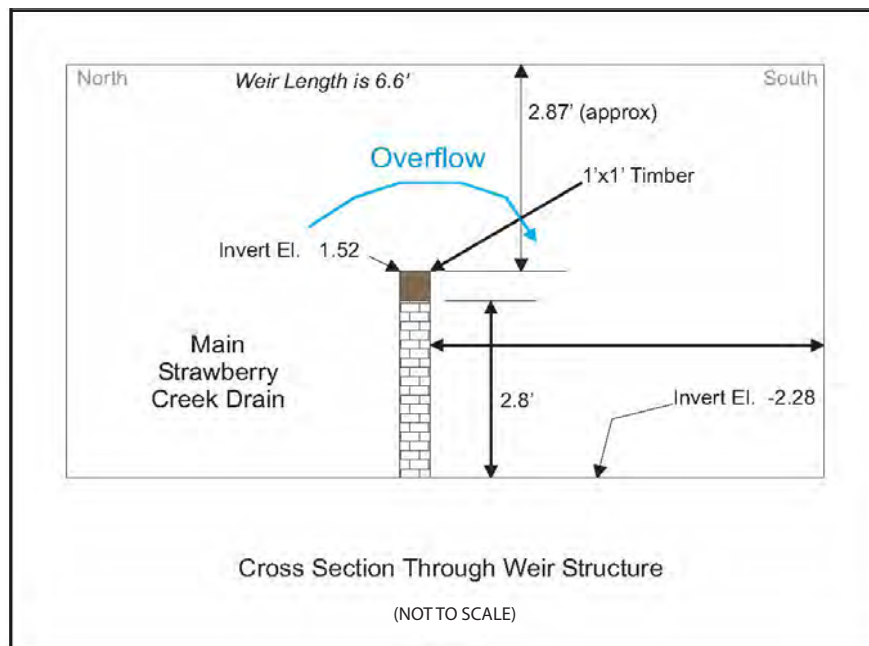


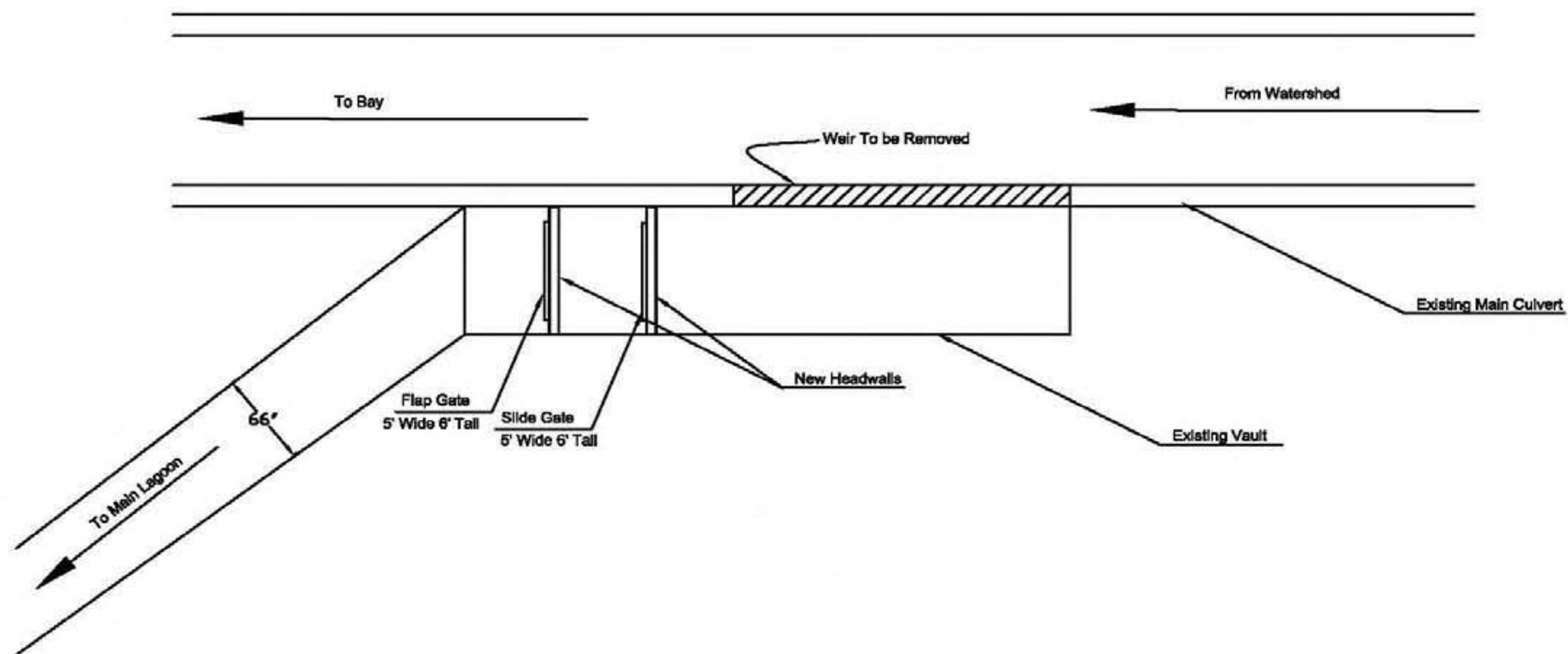
FIGURE 3-5
Plan View Detail of Proposed Open Channel Connection between Model Yacht Basin and Main Lagoon

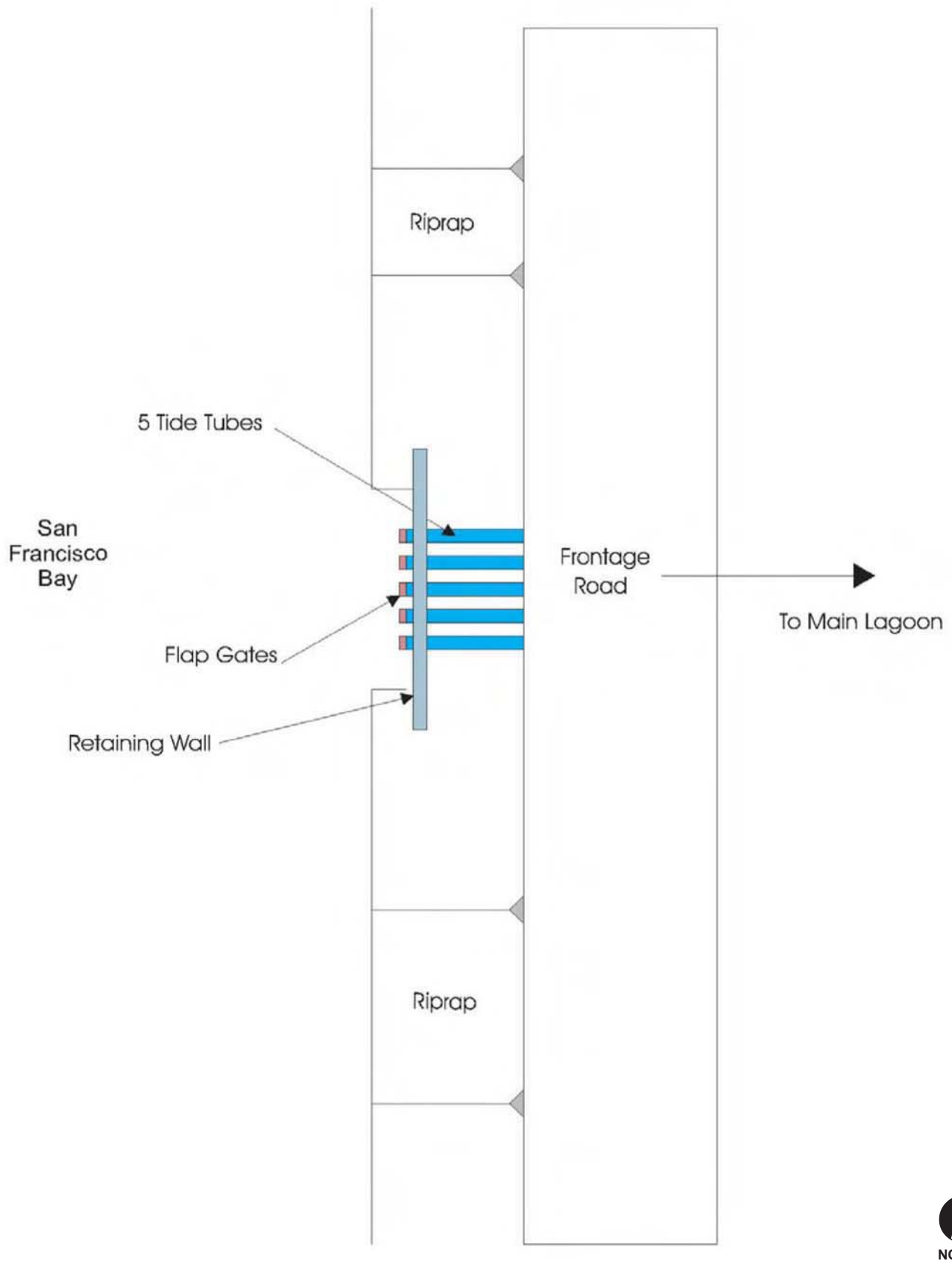
Source: Hydrologic Systems, Inc. and Laurel Marcus and Associates, February 2008.



Source: Hydrologic Systems, Inc. and Laurel Marcus and Associates, February 2008.

Strawberry Drain





Source: Hydrologic Systems, Inc. and Laurel Marcus and Associates, February 2012.

drains would remain open during dry periods to facilitate tidal exchange, and close upon initiation of flow in the upstream storm drain network. However, the gates to the lagoons would re-open during flood events equal to or larger than the 2-year storm that would threaten to cause increased flooding upstream. The potential impacts of the Preferred Project (No SW-Unsealed) hydrology and water quality are evaluated in Section 4.3, Hydrology and Water Quality, and the potential hydrology and water quality impacts of the two alternatives are analyzed in Section 5, Alternatives, of this Draft EIR.

Aquatic Park Watershed Stormwater Quality

The persistent contaminants that pose the greatest biological problems in the tidal lagoons of Aquatic Park as well as San Francisco Bay are transported on clay particles moving as suspended sediment in stormwater. Implementation of the hydrologic component of the project to prevent stormwater inflow from reaching the lagoon system via the Potter Street and Strawberry storm drain connections and revising the water circulation in the lagoons to move other stormwater out more quickly would reduce the deposition of clay particles in the lagoons; however, these particles would still move into the Bay.

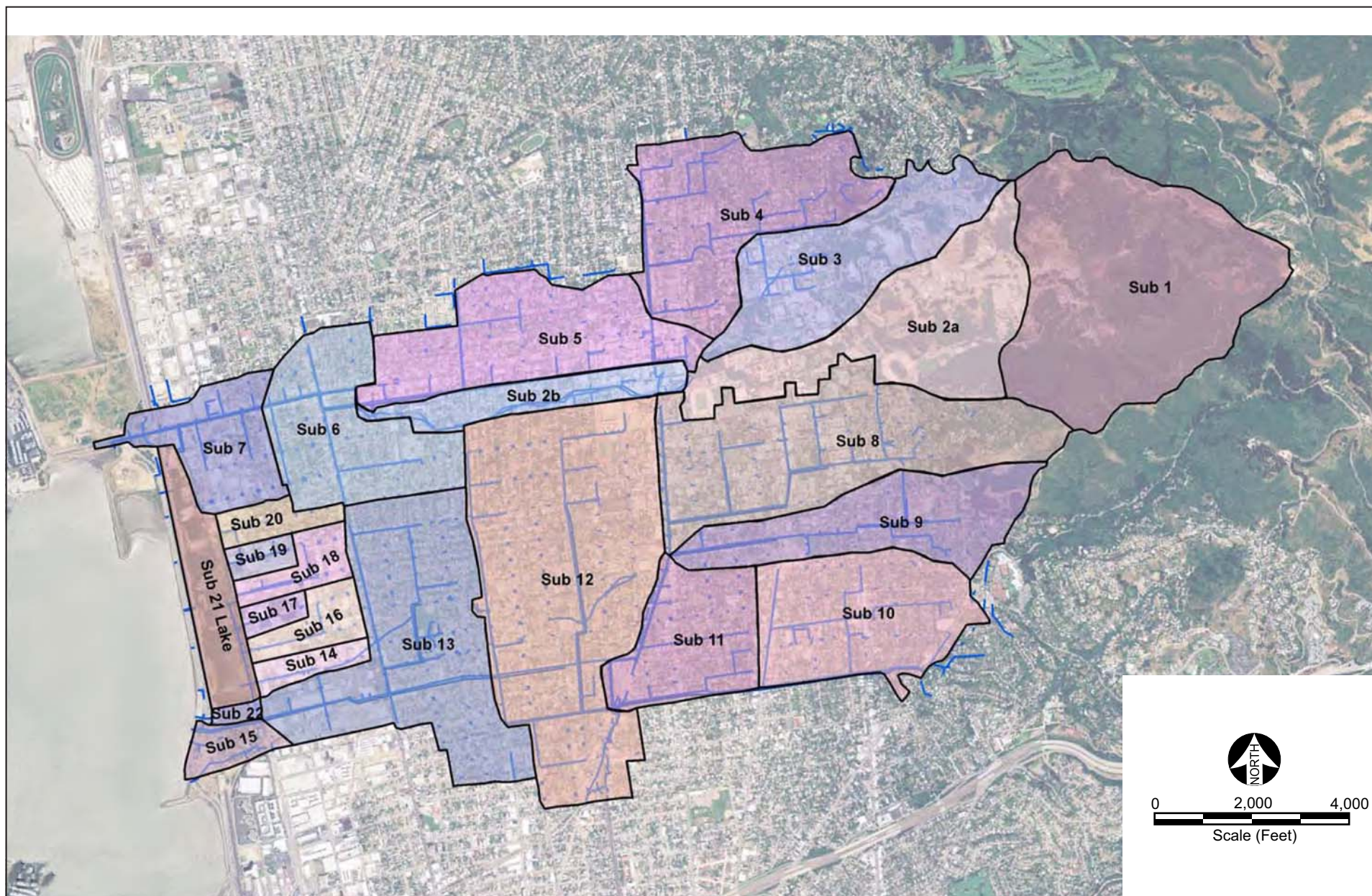
The most direct way to reduce stormwater pollutant entry to the lagoon system is to reduce it in the watershed of Aquatic Park. Figure 3-9 shows the various sub-basins in the Aquatic Park watershed. Most of this area drains either to the Strawberry or the Potter Street storm drains. The proposed gates would block stormwater from these two drains from entering the lagoons. However, for the “local” watershed of the Park, it is not possible to prevent stormwater flows from entering the lagoons.

A number of smaller storm drains and runoff areas contribute stormwater directly into the Main Lagoon. Watershed flow modeling has shown that 30 percent of stormwater entering the lagoons originates from these storm drains and overland urban runoff along the east side of the Park. Addison and Bancroft streets contribute street runoff directly into the Main Lagoon.

Habitat Component

Salt/Brackish Wetland Restoration

The Rowing Club site was selected as the salt/brackish wetland restoration site due to its larger size and few shoreline trees. There is also an intertidal flat and narrow strip (0.1 acre) of pickleweed marsh along the lagoon shoreline. Creating a salt/brackish wetland adjacent to an intertidal area would create a larger, more valuable wildlife area. Larger patches of habitat with variation in tidal levels provides for a number of different types of birds. The intertidal flat lies at the -1.0 to -3.0 feet (Berkeley Datum) elevation. The narrow band of pickleweed lies at the -1.0 to 0.0 feet (Berkeley Datum) elevation. It is important to note that elevations of structures, topographic features, and water surfaces are typically expressed in relation to a particular datum. For example, navigational charts use Mean Lower Low Water (MLLW) to define 0.0 feet. Two of the most commonly referenced datums in the San Francisco Bay area are the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum 1988. The City of Berkeley has used a local datum (the Berkeley Datum) for many years. All elevations in this Draft EIR are expressed in terms of the Berkeley Datum, consistent with the NRMP and APIP reports.

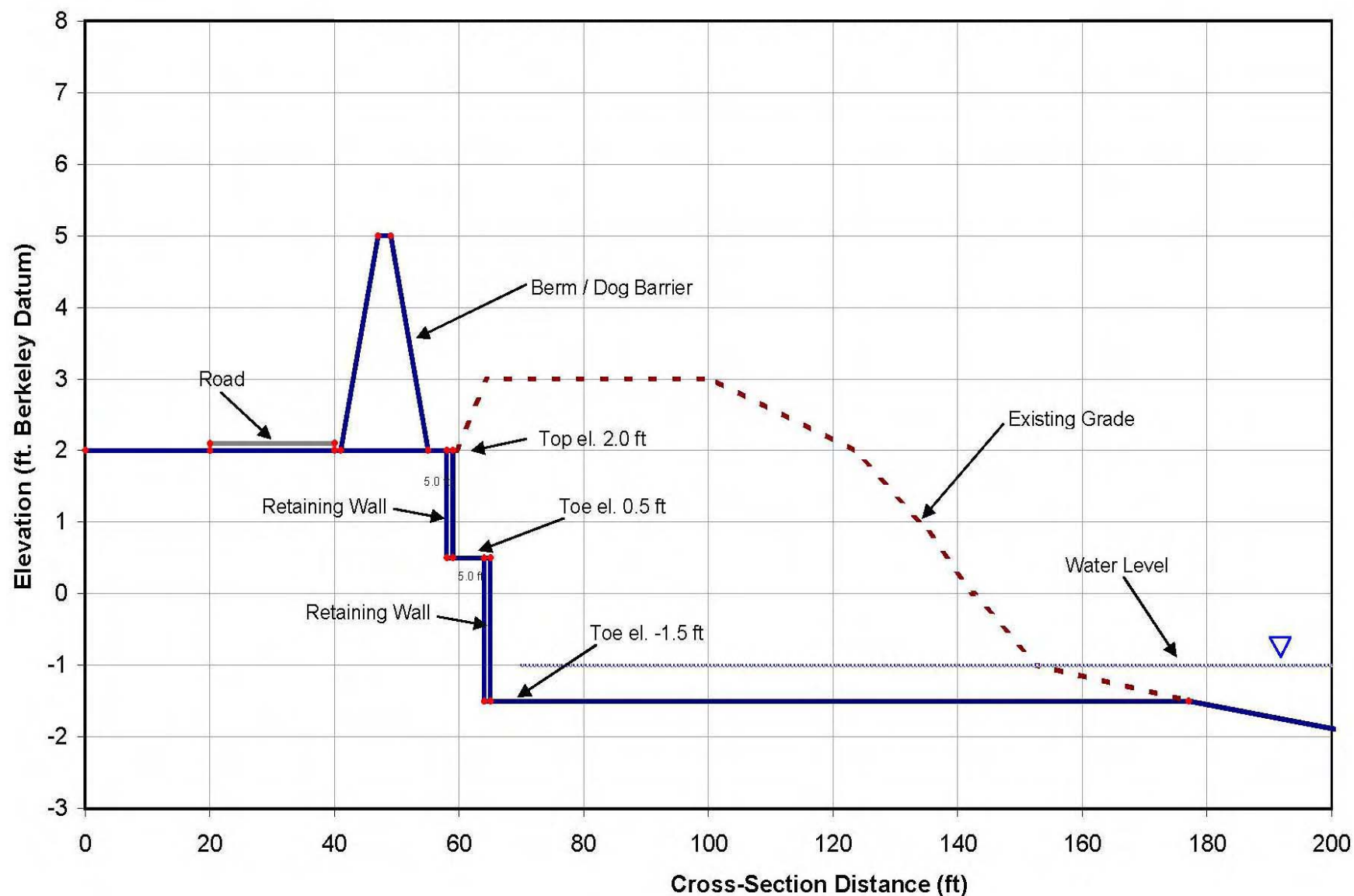


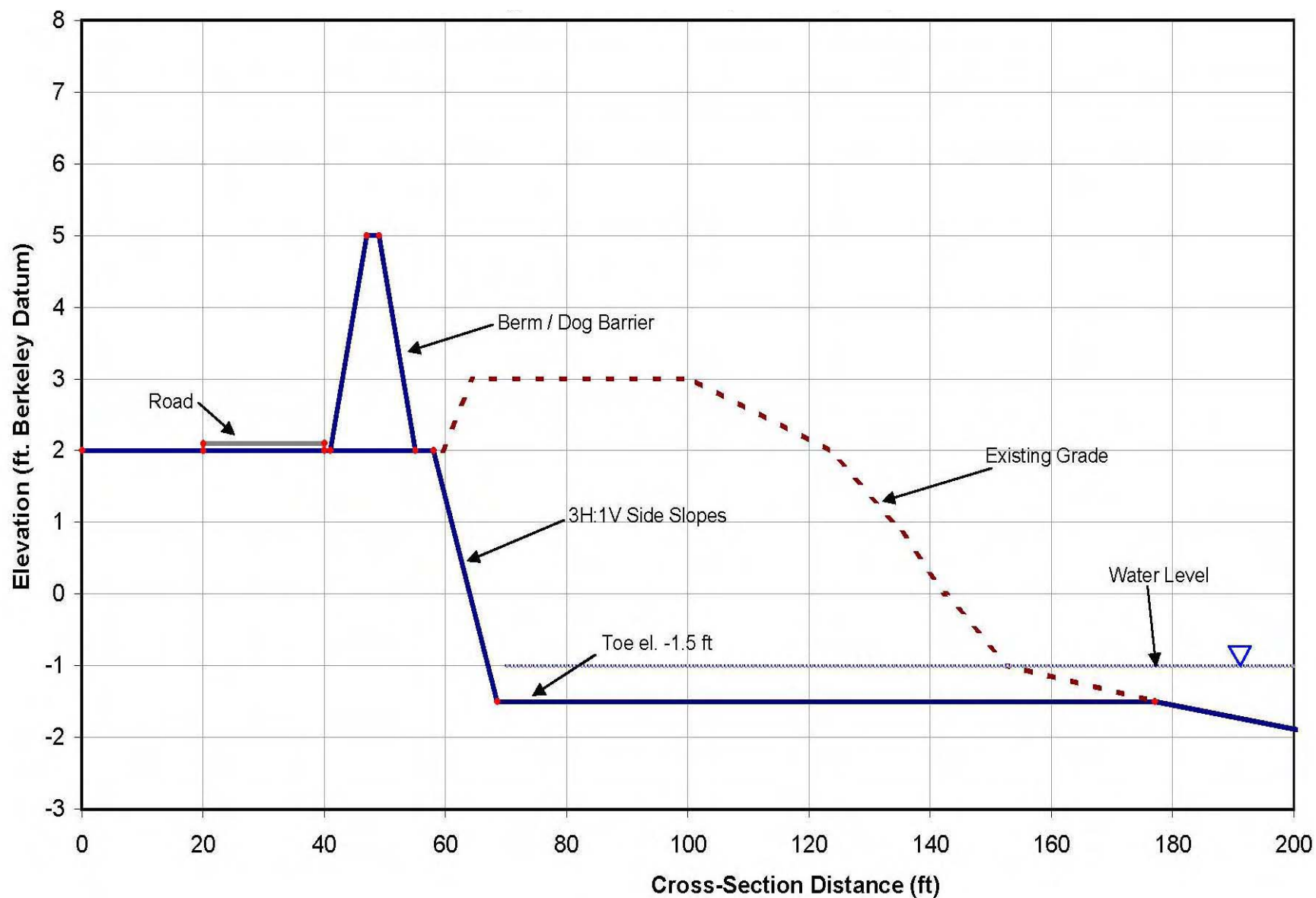
The Rowing Club site would be excavated down to the elevation of -1.5 feet (Berkeley Datum). Measures would be taken to avoid affecting the existing strip of pickleweed and the intertidal flat during construction, but subsequent tidal cycles could affect this small strip of pickleweed. The outer edge of the excavation would extend to near the road edge, but the Monterey cypress trees along the southern edge of the site would be retained. A 25-foot buffer would be retained between the Rowing Club building and the wetland site.

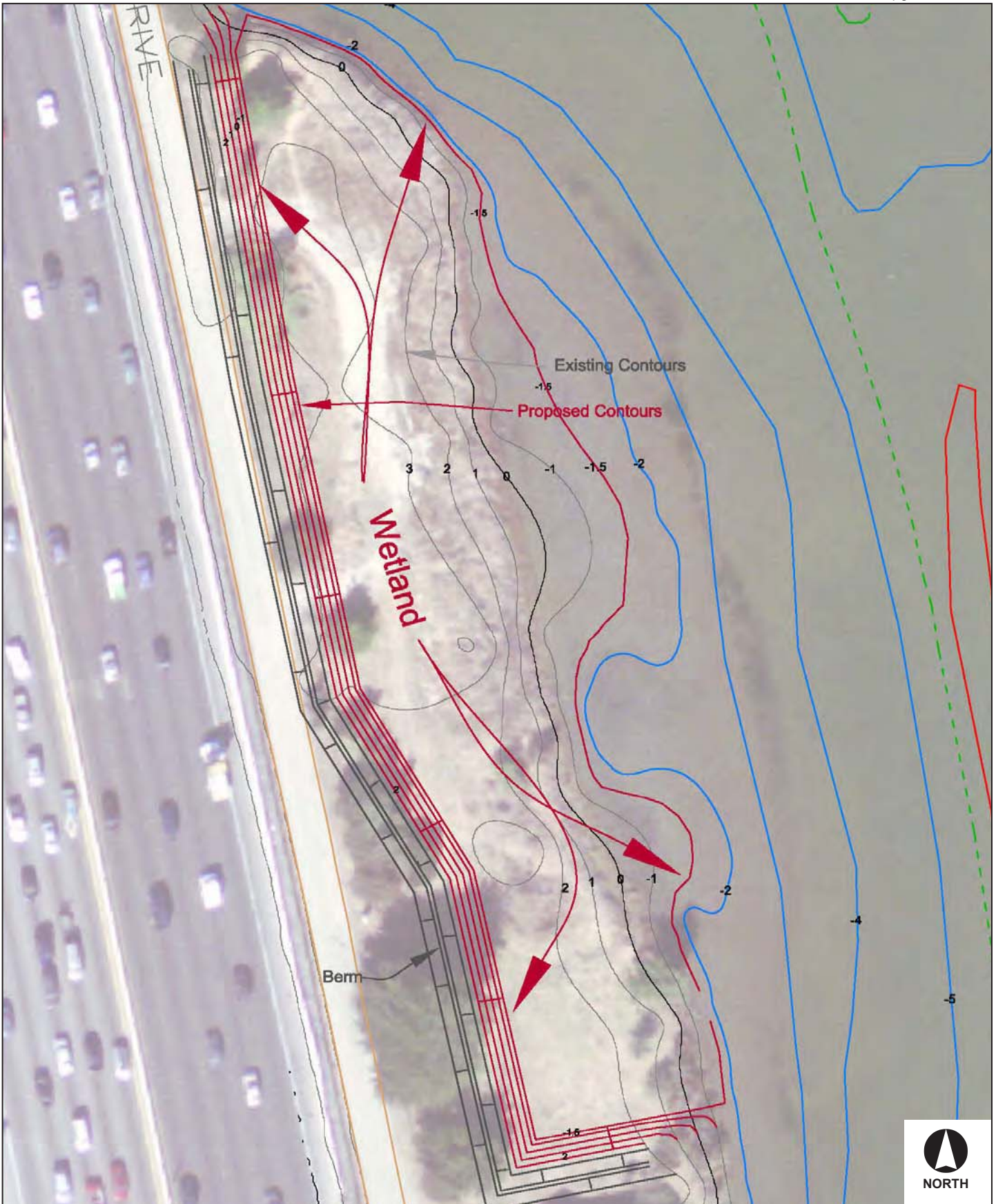
Even with the hydrologic improvements that would be implemented under the Preferred Project, the average tidal range in the Main Lagoon would be limited to 1 foot, which would limit the slope of the wetland restoration to a nearly flat elevation. Currently, the road on the western edge of the site is at elevation +3.0 feet (Berkeley Datum). In order to maximize the intertidal area, the excavation would be extended to 20 feet from the eastern edge of the road. There are two options for the road edge of the new wetland: (1) a retaining structure on the wetland edge and a small vegetated berm in the buffer, shown in Figure 3-10; or (2) a 3:1 slope from the wetland to the buffer with a small vegetated berm, shown in Figure 3-11. The berm would serve to visually screen the road from the wetland and reduce disturbance to wildlife from dogs and people. A plan view of the proposed salt/brackish wetland area is shown in Figure 3-12.

Excavation to create the salt/brackish wetland would generate approximately 6,282 cubic yards of soil and would use only about 560 cubic yards to create the berm. Use of the excavated material would be contingent upon soils testing to determine if any contaminants exist at unsafe levels. If the excavated material is determined safe for use as fill, it could be used for a number of other project elements including a berm in the Radio Tower Pond to protect the Radio Transmitter Building from flooding, increasing the elevation of Bird Island to provide an improved bird roosting area, and replacement of the asphalt former parking areas with upland native plantings. The results of limited soil testing at four locations within the project site indicate low levels of arsenic, lead, and petroleum hydrocarbons (diesel and motor oil) are present at the sample locations, but the levels do not exceed California hazardous waste criteria. However, as described in Section 4.3, Hydrology and Water Quality, of this Draft EIR, further soil sampling and analysis would be necessary to adequately evaluate the level of metals and petroleum hydrocarbons at the project site and to determine whether the excavated soil is appropriate for reuse and whether special disposal requirements would apply. If the excavated material proves to be contaminated or otherwise unsuitable for use as fill for these purposes, soil would need to be imported to the site, and excavated soil would be removed and disposed of at a facility permitted to accept the soil, consistent with applicable regulations.

Once the wetland site is excavated, some salt marsh plants would be planted and some would be expected to colonize. Pickleweed would be retained along the site's eastern edge and is expected to spread and colonize the new excavated area. The western edge of the site would be planted with high marsh plants including alkali heath (*Frankenia grandifolia*), fat hen (*Atriplex patula*), jaumea (*Jaumea carnosa*), salt grass (*Distichlis spicata*), gumplant (*Grindelia stricta* var. *stricta*), and salt marsh rosemary (*Limonium californicum*). Transition zone plants including California buckwheat (*Erigeron* sp.), coyote brush (*Baccharis pilularis*), and bunchgrass would be planted along the berm.







Source: Hydrologic Systems, Inc. and Laurel Marcus and Associates, February 2008.

ATKINS

FIGURE 3-12
Plan View of Proposed Salt/Brackish Wetland at Rowing Club Site

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Berkeley Aquatic Park Improvement Program

Shoreline Areas

The shoreline areas of the rest of the Main Lagoon and the other two lagoons offer an opportunity to eradicate invasive non-native plants and re-vegetate with high marsh/transition zone native plants. The mapped invasive plants would be removed in three stages. Stage 1 would include all of the shoreline invasive plants including ice plant, tamarisk, cotoneaster, fennel, pepperweed, firethorn, and ivy in the Radio Tower Pond. Invasive plant removal in Stage 1 would also include other areas of the Park containing invasive plants that spread by stem, seed, and berry such as Himalayan blackberry, pampas grass, broom, and giant reed. Acacia and eucalyptus seedlings on the shorelines would also be removed. Stage 2 would include additional invasive plant removal in the freshwater wetlands. Stage 3 would include large eucalyptus and acacia trees, which make up the majority of the acreage of invasive plants in the Park. Stage 3 invasive plant removal would not be completed until replacement trees have been installed.

Following invasive plant removal along the lagoon shorelines, wetland species including gumplant, pickleweed, salt marsh rosemary, saltgrass, jaumea, and alkali heath would be planted along the tidal shoreline on the Main Lagoon, Model Yacht Basin, and Radio Tower Pond. Away from the tidal shoreline on the edges of the grass, plants such as beach aster (*Erigeron glaucus*), Douglas iris (*Iris douglasiana*), monkey flower (*Mimulus sp.*), and other low-growing natives would be planted. It is not advisable to try to plant native species under the existing cypress trees; however, cypress seedlings could be planted in areas where restricting lagoon views are acceptable. It is also not advisable to plant native species in heavily used recreational areas.

Planting willows has been suggested along shoreline sections of the Main Lagoon to provide a visual screen between recreational trails and winter birds. Willows do not tolerate saline or even brackish soils. Willows would need to be planted away from the tidal zone because fresh water (stormwater) would be restricted from the lagoon system. In locations along the Main Lagoon where the creeks and storm drains discharge to the lagoon, willows may be able to grow along the shoreline, but this would produce spotty coverage.

Bird Island

The Preferred Project may also include habitat improvements to Bird Island. Bird Island has a greater degree of isolation from recreational use and a higher potential for a successful habitat restoration. Bird Island comprises 0.45 acres, lies at 0.0 to - 2.0 feet (Berkeley Datum), and is inundated during storms. The island would need to be raised up to +5.0 feet to allow for revegetation for bird roosting habitat and creation of potential nesting habitat for dabbling ducks. The isolation of the island makes it the best location in the park for these habitats. The City would need to revise its lease with the Waterskiing Club to allow removal of the building and fence and abandon recreational use of the island.

In order to increase the elevation of Bird Island, the height of the rock riprap around the island periphery would first be increased. The rock would serve to contain the fill material and to break up wind-driven waves that can erode the shoreline. Approximately 230 cubic yards of riprap would be required and would extend 1 foot higher than the high water level. The bridge that would eventually be used for the new connection between the Model Yacht Basin and the Main Lagoon would first be placed between the Main Lagoon shore and Bird Island and used to truck the fill material to the island. Approximately 2,230 cubic

yards of material would be placed on Bird Island. The material would be distributed to create a variable, hummocky topography with two mounds and a lower area inside the island, as shown in Figure 3-13. There are several water lines that go out to the island that can be used as a source of freshwater to irrigate plants and, if possible, to create a small freshwater source for ducks in the interior area of the island.

Erosion blankets or other measures would be needed to stabilize the new fill until plants establish. Native trees such as Monterey cypress (*Cupressus macrocarpa*), California bay laurel (*Umbellularia californica*), Monterey pine (*Pinus radiata*), and potentially others would be planted on the island to provide roosting habitat. These species can withstand wind and often grow on coastal bluffs and hills. These trees would take five years to grow large enough for bird roosting and soil stability. Erosion control measures would need to be in place and maintained during this time. Bunchgrasses, rushes, sedges, and low-growing shrubs such as coyote brush and gumplant would also be planted to provide refuge areas.

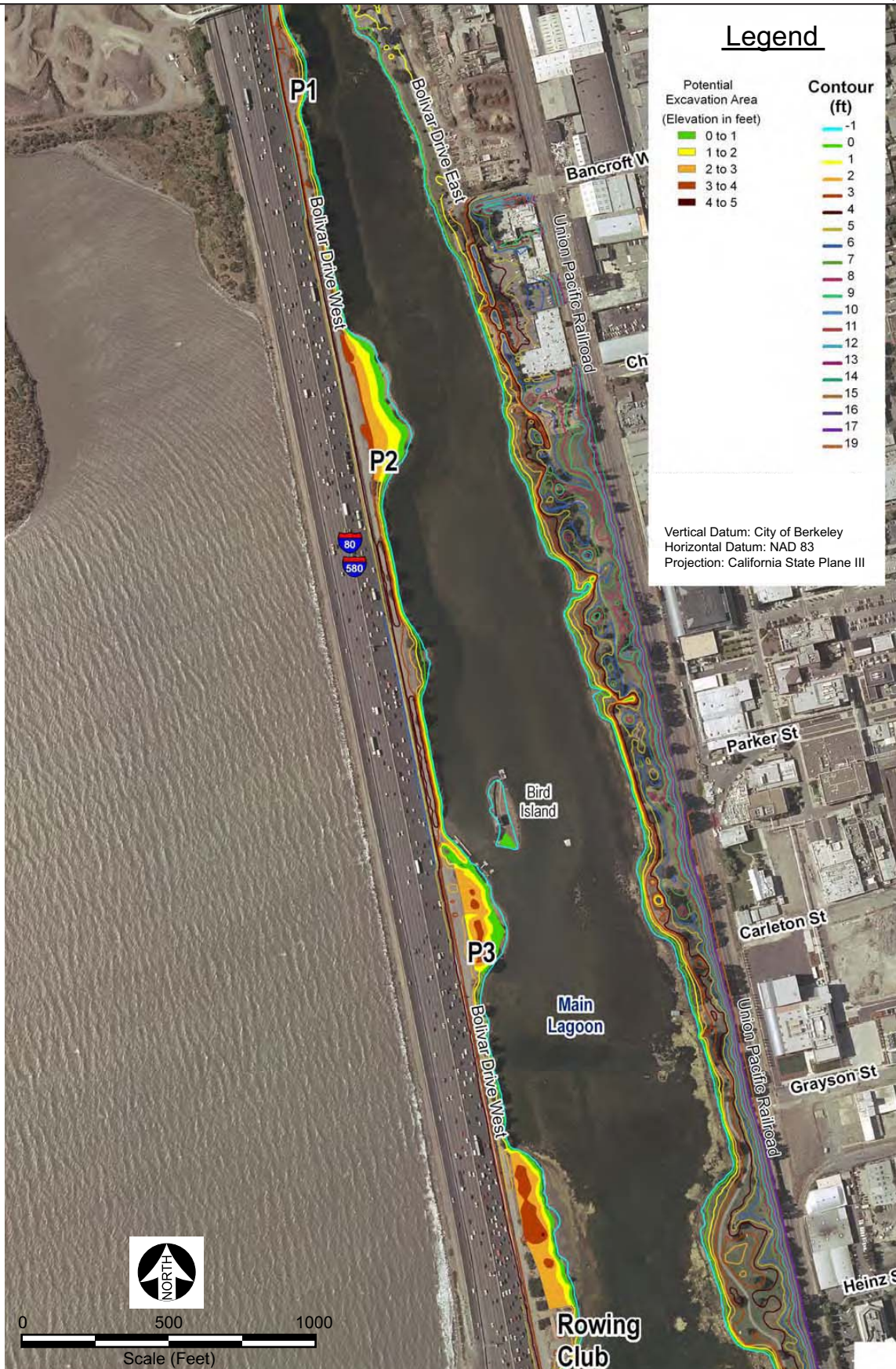
Upland Areas

Additional upland areas of the Park can be improved using the soil excavated from the wetland restoration, if it is found suitable. The abandoned parking lots and adjacent vegetated bulb-out areas could be enhanced as native upland habitats, as shown in Figure 3-14. The asphalt in the parking area would be broken up and removed and the undersoil broken up to allow plant roots to penetrate. The asphalt would be recycled. The parking areas to the edge of the access road and into the western edge of the bulb-out would have about 2.5 feet of soil placed once the asphalt is removed. The soil would be placed in a hummocky configuration similar to coastal bluff/sand dune areas. Larger native trees on these sites would be retained. Erosion blankets would be used to stabilize the soil surface while revegetation is occurring.

The parking areas restored as upland habitat could support a variety of native plants such as buckwheat, native bunchgrasses, coyote brush, silk tassel (*Garrya elliptica*), California blue blossom (*Ceanothus* sp.), coffeeberry (*Rhamnus californica*), manzanita (*Arctostaphylos* sp.), sagebrush (*Artemisia californica*), ocean spray (*Holodiscus discolor*), redbud (*Cercis occidentalis*), toyon (*Heteromeles arbutifolia*), black sage (*Salvia mellifera*), Douglas iris (*Iris douglasiana*), monkey flower (*Mimulus* sp.), California poppy (*Eschscholzia californica*), lupine (*Lupinus* sp.), California fuchsia (*Epilobium canum*), beach aster (*Erigeron glaucus*), California saltbush (*Atriplex californica*), and yarrow (*Achillea millefolium*). Native sand dune species such as beach strawberry (*Fragaria chiloensis*), silver beachweed (*Ambrosia chamissonis*), and yellow sand verbena (*Abronia latifolia*) could also be planted.

Revegetation along the western side may require some experimentation to determine which native species will grow in this area. Either a drip irrigation system would be needed for plant watering or a hand-watering system should be employed. These areas may require temporary fencing to allow plants to become established and eliminate trampling, digging, and other destructive actions. In many sand dune/coastal bluff areas, revegetation requires the removal of park users and then the creation of a dedicated walkway through the restored area. Pathways from the access road to the lagoon shoreline would be established as part of the revegetation project. The revegetation areas include the parking areas and a small part of the vegetated area.

Source: Hydrologic Systems, Inc. and Laurel Marcus and Associates, February 2008.



Source: Hydrologic Systems, Inc. and Laurel Marcus and Associates, February 2008.

Additional bird roosting areas could be created by placing floating platforms in the open water of the lagoons 30 feet or more from the shoreline. The platforms could be made of wood or plastic and anchored to the bottom. Another potential type of roost would be the placement of rock in the lagoon 30 feet from the shoreline. Both of these improvements would need to be placed out of the area used for water recreation.

Reducing Disturbance in Habitat Areas

The greatest challenge to creating viable wildlife habitats at Aquatic Park is buffering habitat areas from the high level of human activity and unleashed dogs in the park. The eastern side of the Park has the highest amount of human activity, but both the east and west sides of the park suffer from unleashed dogs disturbing birds and wildlife and sometimes chasing them into the lagoons. The west side is the primary focus for habitat improvement under the Preferred Project in order to take advantage of the lower level of disturbance there.

As part of the project, the following measures would be implemented to assure that restored habitats could support wildlife:

- Restrict off-leash dogs and people from the restoration areas through the use of signs, leash-law enforcement and, if required, fencing.
- Restrict homeless encampments and trash dumping through focused enforcement and signage.

Summary of Project Components

Table 3-1 provides a summary of the various components that would be implemented as part of the Preferred Project.

| Table 3-1 Project Components | |
|--|---|
| Component | Purpose/Benefits |
| Hydrologic Component | |
| Enlarge connection between Potter Street storm drain and Model Yacht Basin | Increase the amount of cooler and more saline water coming into the lagoons from San Francisco Bay |
| Create an open channel connection between the Model Yacht Club and the Main Lagoon | Increase interlagoon circulation and water quality while minimizing maintenance requirements |
| Install slide gates on storm drain connections to Aquatic Park lagoons | Provide the ability to control the amount of polluted stormwater from entering the lagoons |
| Repair main tide tubes | Prevent the tide tubes from totally collapsing and preventing all Bay water from entering the lagoons, improve Bay-lagoon circulation |
| Connect Radio Tower Pond with the Potter Street storm drain | Improve inter-lagoon circulation and water quality |

**Table 3-1
Project Components**

| Component | Purpose/Benefits |
|---|---|
| Habitat Component | |
| Create salt/brackish wetland restoration at the Rowing Club site | Improve the viability of the Rowing Club site to support plants and wildlife compared to existing conditions |
| Remove invasive non-native plants and replacement with native species appropriate to the location | Increase the overall value of habitat at Aquatic Park by restoring the plant community and providing greater potential for use by special-status wildlife species |
| Improve habitat on Bird Island and upland areas on the western side of the Main Lagoon | Bird Island's isolation from recreational uses make it a good candidate for habitat improvements due to the high potential for success; habitat improvements would require that the elevation of Bird Island be increased |
| Improve additional upland areas of the park (i.e., abandoned parking lots and bulbout areas) | Remove unnecessary and/or unused asphalt paving and revegetate |
| Buffer habitat areas from human activity and unleashed animals | Ensure that habitat improvements are protected, so that new growth can be properly established |

Source: Atkins, 2012.

3.5 APPROACH TO PROJECT ANALYSIS

Although the APIP is intended to result in environmental improvement of the Aquatic Park area, there may be adverse environmental impacts associated with individual actions undertaken as part of the overall project. This Draft EIR evaluates these impacts and identifies mitigation measures necessary to mitigate impacts.

Related Projects

Section 15130 of the 2004 CEQA Guidelines requires that EIRs consider the significant environmental effects of a proposed project as well as its "cumulative impacts." A cumulative impact is defined as an impact that is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts (CEQA Guidelines §15355). As stated in CEQA Guidelines §15130(a)(1), the cumulative impacts discussion in an EIR need not discuss impacts that do not result in part from the project evaluated in the EIR. Cumulative impacts may be analyzed by considering a list of past, present, and probable future projects producing related or cumulative impacts [CEQA Guidelines §15130(b)(1)(A)].

All projects that are proposed (i.e., with pending applications), recently approved, under construction, or reasonably foreseeable that could produce a cumulative impact on the local environment when considered in conjunction with a proposed project are required to be evaluated in an EIR. These projects may include

projects outside of the control of the lead agency. If a concise list of related projects is not available, cumulative impacts may be analyzed using the regional or area-wide growth projections contained in an adopted or certified General Plan or related planning document.

In this Draft EIR, cumulative impact analyses are provided for each environmental issue discussed in Section 4, Environmental Impact Analysis. The cumulative analysis in this EIR considers buildout of the West Berkeley Project. The West Berkeley Project is intended to revitalize the West Berkeley area through amendments to zoning requirements, improvement of environmental quality, and investment in infrastructure. The goals, objectives, and policies included in each element are intended to help the West Berkeley Project achieve its vision for the future of West Berkeley.

3.6 PROJECT APPLICANT

City of Berkeley
 Department of Parks Recreation and Waterfront
 1947 Center Street, First Floor
 Berkeley, CA 94704
 Attn: Deborah Chernin, Principal Planner

3.7 PROJECT APPROVALS

As the public agency with principal responsibility for approving the Preferred Project, the City of Berkeley would serve as the lead agency for the purposes of CEQA. The contract(s) for implementation of the Preferred Project is/are expected to be subject to the following discretionary approvals from the City of Berkeley.

- Certification of the EIR.
- Approval of the Mitigation Monitoring and Reporting Program (MMRP).
- Issuance of a Grading and Excavation Permit.
- Tree Removal Permit(s) as required by the Municipal Code.
- Any other discretionary approval required by the City to implement the Preferred Project.

3.8 APPROVALS BY RESPONSIBLE AGENCIES

Approvals by other agencies that may be needed for the Preferred Project to proceed are identified below, and those agencies are expected to review this Draft EIR in evaluating the Preferred Project:

- San Francisco Regional Water Quality Control Board – certification responsibility under Section 401 of the Clean Water Act and oversight for compliance with existing National Pollutant

Discharge Elimination System (NPDES) permit for construction activities and the applicable municipal separate stormwater system.

- US Army Corps of Engineers – Under Section 404 of the Clean Water Act, the US Army Corps of Engineers (Corps) has the primary authority to regulate activities that discharge fill or dredge material into waters of the United States through its Section 404 permitting program.
- US Fish and Wildlife Service – consultation with the Corps as part of the Section 404 permit process.
- US Environmental Protection Agency – possible review authority under Section 404(b)(1) of the Clean Water Act.
- National Marine Fisheries Service – possible consultation with the Corps as part of the Section 404 permit process.
- San Francisco Bay Conservation and Development Commission – authorized to control Bay filling and dredging and Bay-related shoreline development on lands within its jurisdictional boundary, including a 100-foot band along Interstate 80.
- California Department of Fish and Game – responsible for issuance of a possible stream alteration agreement for proposed modifications to the Aquatic Park lagoons and adjacent wetland areas.
- Caltrans – approval of possible encroachment permit for modifications to the existing storm drain lines and tide tubes that cross Interstate 80 right-of-way.
- East Bay Regional Park District – coordination with the City of Berkeley for project components that could affect the Eastshore State Park.
- State Lands Commission – possible permit authority for construction activities on land owned by the State.

Section 2

Introduction

2.1 PURPOSE OF THIS ENVIRONMENTAL IMPACT REPORT

This Draft Environmental Impact Report (EIR) for the Aquatic Park Improvement Program (APIP) has been prepared by the City of Berkeley (City) Department of Parks, Recreation, and Waterfront, which is the lead agency for the Preferred Project, in conformance with the provisions of the California Environmental Quality Act (CEQA) Guidelines, as amended.¹ The lead agency is the public agency that has the principal responsibility for carrying out or approving a project.

This Draft EIR assesses potentially significant impacts that could result from the Preferred Project. As defined in the CEQA Guidelines Section 15382, a “significant effect on the environment” is:

... a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant.

As stated in the CEQA Guidelines, an EIR is an “informational document” intended to inform public agency decision-makers and the public of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project. The Berkeley City Council will consider this Draft EIR in reviewing the Preferred Project and making the final decision to certify the Final EIR (responses to comments) and to approve or deny the Preferred Project.

The City must consider the information in the Draft and Final EIR and, particularly, each significant impact resulting from the Preferred Project. The City will use the EIR, along with other information in the public record, to determine whether to approve, modify, or disapprove the Preferred Project, and to specify any applicable environmental conditions or mitigation measures as part of the Preferred Project approvals. The purpose of this Draft EIR is to provide the City, responsible and trustee agencies, other public agencies, and the public with detailed information about the environmental effects of implementing the Preferred Project, to examine and institute methods of mitigating any adverse environmental impacts should the Preferred Project be approved, and to consider feasible alternatives to the Preferred Project.

¹ California Governor's Office of Planning Research. *CEQA, California Environmental Quality Act, Statutes and Guidelines*, Guidelines as amended January 1, 2012.

2.2 EIR PROCESS

Notice of Preparation

The Notice of Preparation (NOP) was initially released for the Preferred Project on June 24, 2009, for a 35-day public review period. A public scoping meeting was held on July 9, 2009, by the lead agency. The NOP noted that the Preferred Project may have a significant effect on the environment and that an EIR would be prepared for the Preferred Project.

The NOP was then recirculated on October 19, 2011, in order to solicit additional comments that may have arisen since circulation of the initial NOP. The second NOP was released for a 33-day public review period. During the second public review period, two public scoping meetings were held to solicit comments on the scope of the Draft EIR. The first meeting was held on October 24, 2011, before the Parks and Recreation Commission (P&RC), and the second public meeting was held on November 16, 2011. Copies of the initial and recirculated NOP are provided in Appendix A of this Draft EIR.

Both the original and recirculated NOP were posted on the City's website and sent to individuals, local interest groups, adjacent property owners, and responsible and trustee State and local agencies having jurisdiction or interest over environmental resources and/or conditions in the vicinity of the project site. The purpose of the NOP was to allow various private and public entities to transmit their concerns and comments on the scope and content of the Draft EIR, focusing on specific information related to each individual's or group's interest or agency's statutory responsibility early in the environmental review process.

In response to the NOP (original and recirculated), letters were received from the following agencies:

- San Francisco Bay Regional Water Quality Control Board
- California Department of Transportation
- Department of Parks and Recreation – Diablo Vista District
- East Bay Regional Park District
- Association of Bay Area Governments – Bay Trail Project

In addition, six letters were received from individuals and organizations, and nine members of the public made oral comments at the Draft EIR scoping meeting held on July 19, 2009. Twelve letters were received from individuals and organizations were received in response to the recirculated NOP, and a total of 15 members of the public made oral comments at the scoping meetings held on October 24, 2011, and November 16, 2011. Copies of these NOP comment letters are included in Appendix A of this Draft EIR.

Scope of Draft EIR

The NOP indicated that the following environmental topics would be addressed in detail in the Draft EIR:

- Biological Resources
- Hydrology and Water Quality

The Preferred Project would not result in significant environmental impacts on aesthetics, agriculture and forest resources, air quality, cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, mineral resources, noise, population and housing, public services, transportation, and utilities and service systems. A detailed analysis of these topics is, therefore, not included in the Draft EIR; however, these topics are briefly discussed in Section 6, Other CEQA Considerations, under the heading “Impacts Found to Be Less Than Significant.”

Draft EIR and Public Review

This Draft EIR provides an analysis of physical impacts anticipated to result from the Preferred Project. Where significant impacts are identified, the Draft EIR recommends feasible mitigation measures to reduce or eliminate the significant impacts and identifies which significant impacts are unavoidable. Alternatives to the Preferred Project are also presented (Section 5). This environmental document is considered a draft under CEQA because it must be reviewed and commented upon by public agencies, organizations, and individuals before being finalized.

This Draft EIR is being distributed for a minimum of a 45-day public review and comment period, beginning November 8, 2012, and ending December 28, 2012. Readers are invited to submit written comments on the document (e.g., does this Draft EIR identify and analyze the possible environmental impacts and recommend appropriate mitigation measures? Does it consider and evaluate a reasonable range of alternatives?). Comments are most helpful when they suggest specific alternatives or measures that would better mitigate significant environmental effects. Written comments should be submitted by December 28, 2012, to:

City of Berkeley
 Department of Parks Recreation and Waterfront
 Attention: Deborah Chernin
 1947 Center Street, First Floor
 Berkeley, CA 94704
 DChernin@CityofBerkeley.info

The P&RC will hold two public hearings to take oral comments on the Draft EIR: Monday, December 3, 2012, at its regular meeting at 7:30 p.m. at Frances Albrier Center at San Pablo Park, 2800 Park Street, Berkeley, California; and Wednesday, December 12, 2012, from 7:00 p.m. to 8:30 p.m. at James Kenney Community Center (Community Room, 2nd Floor), 1720 Eighth Street, Berkeley, California. Hearing notices will be mailed to responsible agencies and interested individuals.

Final EIR and Project Approval

Following the close of the public review period, the City will prepare responses to all relevant comments that relate to potential physical changes to the environment as a result of implementing the Preferred Project. The Draft EIR, along with the responses to the comments on relevant environmental issues received during the review period, will comprise the Final EIR and will be considered by the City Council in making the decision to certify the Final EIR and to approve or deny the Preferred Project.

Certification of the Final EIR by the City Council as complete and adequate in conformance with CEQA does not grant any land use approvals or entitlements for the Preferred Project. The merits of the Preferred Project will be considered by the City Council in tandem with review of the Final EIR. The CEQA Guidelines require that, for one or more significant unavoidable impacts that cannot be substantially mitigated, the lead agency must prepare a Statement of Overriding Considerations in which the lead agency balances the social, economic, technological, and legal benefits of approving a project against the significant and unavoidable environmental impacts which would result from project implementation. This Statement of Overriding Considerations must be approved by the City Council in order for the Preferred Project to be approved.

2.3 USE OF THIS REPORT

An EIR is an informational document whose purpose is to make the public and decision-makers aware of the environmental consequences of a project. The surrounding residents and businesses and any other interested individual may review the EIR to evaluate the Preferred Project's effects on baseline conditions, especially water quality, stormwater management, and aquatic habitat, and the proposed mitigation measures to reduce potential environmental consequences. As noted above, the City must consider the information in the Draft and Final EIR and, particularly, each significant impact resulting from the Preferred Project. The City will use the EIR, along with other information in the public record, to determine whether to approve, modify, or disapprove the Preferred Project, and to specify any applicable environmental conditions or mitigation measures as part of the Preferred Project approvals.

Various City departments will also review this EIR to understand the Preferred Project's service demands, permit requirements, and mitigation obligations. For example, the City's Public Works Department will review the project's effect on the City's storm drain system. Section 3.7 of this EIR lists permits that would be needed to implement the Preferred Project.

Other public agencies besides the lead agency also have discretionary approval over the project. These agencies, known as "responsible agencies," will also review the EIR and may comment during the public review period. A list of these agencies is provided in Section 3.8 of this EIR under the heading "Responsible Agencies".

2.4 REPORT ORGANIZATION

This Draft EIR is organized into the following sections:

- *Section 1 – Summary:* Provides a summary of the Preferred Project and of the impacts that would result from its implementation, describes mitigation measures recommended to reduce or avoid significant impacts, and identifies alternatives to the Preferred Project.
- *Section 2 – Introduction:* Discusses the overall Draft EIR purpose, provides a summary of the Preferred Project and the Draft EIR scope, and summarizes the organization of the Draft EIR.
- *Section 3 – Project Description:* Provides a description of the project site, site development, project objectives, required approval process, and details of the Preferred Project itself.
- *Section 4 – Environmental Analysis:* Describes the existing conditions (setting), environmental impact assessment, and mitigation measures for each environmental technical topic.
- *Section 5 – Alternatives:* Provides an evaluation of two alternatives to the Preferred Project in addition to the No Project alternative.
- *Section 6 – Other CEQA Considerations:* Provides additional specifically-required analyses of the Preferred Project's effects, significant irreversible changes, cumulative impacts, and effects not found to be significant.
- *Section 7 – List of Preparers:* Provides a list of all individuals and agencies responsible for preparation of the EIR.
- *Section 8 – References:* Provides a list of references cited in the EIR.

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4.2 BIOLOGICAL RESOURCES

Introduction

This section of the Draft EIR analyzes the potential impacts of the Preferred Project on biological resources in the project area. This section describes the existing biological setting, including, but not limited to, types of habitat and diversity of species in the project area, as well as applicable regulations focused on the protection of biological resources. Where potentially significant impacts are found, mitigation measures are identified to reduce impacts to the extent feasible. The evaluation of biological resource impacts is based on the Fisheries and Benthic Ecology Impact Assessment (2010) and Berkeley Aquatic Park Peer Review of Biological Resources (2012) technical studies prepared by ENVIRON International Corporation (ENVIRON), and a review of the California Natural Diversity Database (CNDDDB), California Native Plant Society (CNPS) electronic database, and the U.S. Fish and Wildlife Service (USFWS) website for Threatened and Endangered (T&E) species that may occur on or near the project site.

Environmental Setting

Aquatic Park Lagoons

The project site was created in the 1930s as part of the construction of the Eastshore Highway. The alignment of the highway cut off a portion of the Bay and the isolated section of the Bay became the three lagoons that comprise Aquatic Park today. The highway was later expanded to become the present I-80 freeway. The project is located adjacent to central San Francisco Bay, which has the most ocean-like conditions of any area of the Bay. The Golden Gate is directly west of Aquatic Park, making this area of the Bay the most consistently saline and cold from the direct ocean influence.

The primary type of habitat at the project site is the shallow subtidal aquatic habitat in the three lagoons. The three lagoons at the project site total approximately 68 acres of open water. The Main Lagoon covers 58.3 acres, the Model Yacht Basin covers 5 acres, and the Radio Tower Pond covers 4.7 acres. The lagoons are connected to the Bay by 24-inch culverts or tide tubes/storm drains passing beneath I-80. Many of the tide tubes are deteriorating. The five main tide tubes under I-80 are falling apart on the Bay side, and failing riprap and parts of the pipes are occluding flows into several of the tide tubes, thus reducing the amount of tidal inflow reaching the Main Lagoon. The Model Yacht Basin tide tube is buried in sand on the Bay side. The Radio Tower Pond tide tube has collapsed under the frontage road and appears to have separated on the Bay side.

Aquatic Park receives both stormwater from the City of Berkeley and tidal water from the San Francisco Bay. A large portion of the City of Berkeley drains towards Aquatic Park. The majority of this runoff drains into the Potter Street storm drain and the Strawberry storm drain. The Potter Street storm drain crosses the southern portion of Aquatic Park between the Model Yacht Basin and Radio Tower Pond. The Strawberry storm drain is located a short distance to the north of the north end of the Park. Each of these storm drains is connected to one of the lagoons in the Park via a small drain

culvert. During high runoff periods, generally during the winter months, stormwater enters the lagoons from these two drains. In addition to the regional stormwater inflow from these two main storm drains, most of the watershed area immediately east of the Park drains directly into the Main Lagoon through a set of seven local storm drains.

The lagoons are bordered on all sides by concrete and boulder riprap. The Main Lagoon is bordered on the west by a paved roadway used for pedestrian and bicycle traffic, with a vegetated margin between the roadway and the lagoon. A few lightly used old buildings border the northeast end of the Main Lagoon, but most of the eastern side is bordered by park lands. Scattered eucalyptus (*Eucalyptus globulus*) and Monterey cypress (*Cupressus macrocarpa*) border portions of the three lagoons, providing minimal canopy cover of the aquatic habitat and allochthonous material input (leaves, conifer needles, and twigs).

Salt/Brackish Wetland and Shoreline Habitats

The three lagoons currently support very small, scattered patches of low quality salt/brackish wetland habitat. These small patches are highly disturbed and isolated from off-site Bay shoreline habitat that exists in the local area. Plant species observed within the salt/brackish wetlands include cordgrass (*Spartina foliosa*), pickleweed (*Salicornia pacifica*), salt grass (*Distichlis spicata*), sea arrow grass (*Triglochin maritima*), salt marsh gumplant (*Grindelia stricta*), and Jaumea (*Jaumea carnosa*) in low densities. A relatively high number of non-native plant species also occur within the habitat. In general, the lagoons of Aquatic Park have steeply sloped margins and very small average tidal ranges (see Table 4.2-1), which limit the occurrence of salt/brackish wetland habitat within the project area. The largest area of salt/brackish marsh habitat within the Aquatic Park is located along the western shore of the Radio Tower Pond. In total, 0.76 acre of salt/brackish wetland habitat occurs within Aquatic Park. In addition to delineated salt/brackish wetland habitat areas, high marsh plants grow in scattered locations within the riprap of the lagoon shorelines, especially in the Main Lagoon. In general, the salt/brackish wetlands within the project area provide minimal value as wildlife habitat due to their small size, local and regional isolation, susceptibility to ongoing disturbance, and proximity to active recreation uses.

Table 4.2-1
Summary of Tidal Ranges in Aquatic Park Lagoons and San Francisco Bay

| | <u>Minimum Monitored</u> | <u>Maximum Monitored</u> | <u>Maximum Tidal Range</u> | <u>Average Tidal Range</u> | <u>Mean Tidal Level</u> |
|-------------------|------------------------------|------------------------------|--------------------------------|--------------------------------|-----------------------------|
| | (feet) | | | | |
| Main Lagoon | -2.88 | -1.86 | 1.02 | 0.21 | -2.39 |
| Model Yacht Basin | -3.12 | -0.07 | 3.05 | 1.77 | -2.16 |
| Radio Tower Pond | -3.75 | -2.01 | 1.74 | 0.36 | -2.62 |
| San Francisco Bay | -7.30 | 0.81 | 8.11 | 6.16 | -2.73 |

Source: Aquatic Park Implementation Program (APIP) Technical Report, Table 3, 2008.

Notes:

All elevations are in terms of the Berkeley Datum.

Water levels in the lagoons were monitored for the APIP from January to March 2007.

Intertidal Mudflat Habitat

A non-vegetated intertidal mudflat is located within the Main Lagoon mudflat adjacent to the Rowing Club. Although this habitat lacks established vegetation, it likely supports a high density of burrowing invertebrates, and is, therefore, could provide important foraging habitat for wading birds common to the area.

Freshwater Wetland and Creek Habitat

Approximately 1.1 acres of small freshwater wetland and creeks occur on the eastern border of the project area adjacent to the railroad berm. Similar to the salt/brackish wetland habitat that occurs within the project site, the freshwater habitat is relatively low in quality. Native plant species observed in the freshwater wetland and creek habitat include rushes (*Juncus patens* and *J. effuses*), common cattail (*Typha latifolia*), water parsley (*Oenanthe sarmentosa*), bulrush (*Scirpus californicus*), common tule (*Scirpus acutus*), red willow (*Salix laevigata*), alder (*Alnus rhombifolia*), California rose (*Rosa californica*), meadow barley (*Hordeum branchyantherum*), and little quaking grass (*Briza minor*). Non-native plant species observed within the freshwater wetland and creek habitat include Himalayan blackberry (*Rubus armeniacus*), giant reed (*Arundo donax*), French broom (*Genista monspessulana*), English ivy (*Hedera helix*), and kikuyu grass (*Pennisetum clandestinum*). In general, the freshwater wetland and creek habitat within the project area provide minimal value as wildlife habitat due to their small size, preponderance of non-native plant species, and proximity to active recreation uses.

Upland Areas

Upland areas within Aquatic Park consist of both used and abandoned buildings, parking lots, lawn areas, and walking and biking trails. Vegetation within the upland areas is dominated by non-native trees and understory plants, including blue gum (*Eucalyptus globulus*), wattle (*Acacia sp.*), English ivy (*Hedera helix*), and Himalayan blackberry (*Rubus armeniacus*). Scattered native trees such as Monterey cypress (*Cupressus macrocarpa*), and Monterey pine (*Pinus radiata*) are also present in the upland areas. Human disturbance from various recreational activities, homeless encampments, and off-leash domestic dogs limit the value of the upland areas as wildlife habitat, although the taller trees and stands of dense vegetation could provide nesting habitat for a variety of common (non-sensitive) songbirds.

Benthic Community¹

The Main Lagoon ranges in depth from less than 1 foot to 4 feet along the east bank to approximately 8 feet near the west bank. In general, the substrate consists of mostly unconsolidated fine sediment (clay particles), interspersed with sand, gravel, and bivalve shell fragments. The submerged aquatic vegetation in the Main Lagoon consists of widgeon grass (*Ruppia maritima*) and broad-leafed green algae (*Ulva fenestrata*). Small patches of eelgrass (*Zostera marina*) are present on the east side of the center island. Benthic macroinvertebrates identified from the samples collected from Main Lagoon

¹ The benthic zone of the lagoons refers to the lagoon bottom. The benthic community refers to the habitat and species present in on the lagoon bottom.

included various polychaete and oligochaete worms, amphipods (including *Corophium* spp.), bubble snails (*Haminoeidae*), cumacea, mud mussels (*Musculista senhousia*), clams (*Macoma balthica*, *Mya arenaria*, and possibly *Gemma gemma*). Benthic samples taken on the west side of the Main Lagoon at a depth of approximately 8 feet did not contain any living organisms. The substrate on the lagoon bottom in this area is black and smells strongly of hydrogen sulfide, which are parameters typically indicative of highly anaerobic conditions.

The Model Yacht Basin is a relatively shallow feature, with an average water depth of less than three feet. The substrate consists of unconsolidated fine sediment and decaying organic matter. A mat of filamentous algae covers the entire bottom. Benthic macroinvertebrates identified from the samples collected from the Model Yacht Basin included *Corophium* spp., bubble snails, tubificid oligochaete worms, and the polychaete worm, *Streblospio benedicti*.

The Radio Tower Pond is also a relatively shallow feature, with an average water depth of less than three feet. Similar to the Model Yacht Basin, a dense mat of algae covers the lagoon bottom. The substrate of the Radio Tower Pond consists of unconsolidated fine sediment covered with large quantities of decaying organic matter, mostly algae and leaves from trees. No living specimens were collected during the site visit. Bubble snail shells and the exoskeleton of *Corophium* spp., polychaete worms, (*Streblospio benedicti*, *Polydora* species, *Capitella* species) and tubificid oligochaetes were noted.

Fisheries

Because all three lagoons are connected via tidal tubes to the San Francisco Bay, the lagoons have the potential to support, at least seasonally, selected fish species commonly found within the Bay. However, water quality parameters, particularly periodically low dissolved oxygen concentrations, result in unfavorable conditions for the long-term survival or establishment of viable populations of most fish species commonly found in the Bay, including sensitive fishes.

There appears to be a paucity of historical fisheries data for the Aquatic Park lagoons. Literature searches of fisheries data for Aquatic Park were unsuccessful in obtaining historical fisheries data.² ENVIRON conducted fisheries surveys of all three lagoons within Aquatic Park in September 2009 using a variety of sampling techniques, including visual observations, beach seines, dip and trawl nets, minnow traps, and crab ring-nets. A list of fish species observed or captured during the September 2009 survey is presented in Table 4.2-2. Fish and invertebrate species observed or collected within the lagoons of Aquatic Park site are all species known to occur in San Francisco Bay. No listed species were observed or collected during the survey, although a small goby captured in a dip net from the Radio Tower Pond and released before positive identification appeared to have a morphological characteristic similar to the federally endangered tidewater goby (*Eucyclogobius newberryi*). However, no tidewater goby or gobies with morphological characteristics similar to tidewater goby were captured during a subsequent fisheries survey conducted by ENVIRON in December 2011.³ The USFWS

² ENVIRON, *Berkeley Aquatic Park Fisheries and Benthic Ecology Impact Assessment*, April 2010.

³ ENVIRON, *Berkeley Aquatic Park Peer Review of Biological Resources*, February 2012.

considers tidewater goby extirpated⁴ from the San Francisco Bay, including tributary streams and adjacent waters, and the species has not been observed in the San Francisco Bay since 1960s.⁵ The USFWS does not consider the lagoons within Aquatic Park as potential habitat for tidewater goby.⁶

Table 4.2-2
Fish and Invertebrate Species Observed in the Aquatic Park Lagoons, September 2009

| Lagoon | Common Name | Scientific Name | # Observed/ Captured |
|-------------------|-------------------|------------------------------------|----------------------|
| Main Lagoon | Bat ray | <i>Myliobatis californica</i> | 1 |
| | Topsmelt | <i>Atherinops affinis</i> | 1 |
| | Bay pipefish | <i>Syngnathus leptorhynchus</i> | 2 |
| | Yellowfin goby | <i>Acanthogobius flavimanus</i> | |
| | Arrow goby | <i>Clevelandia ios</i> | 15 ¹ |
| | Chameleon goby | <i>Tridentiger trigonocephalus</i> | |
| | Shimofuri goby | <i>Tridentiger bifasciatus</i> | |
| | Oriental shrimp | <i>Palaemon macrodactylus</i> | 52 |
| Model Yacht Basin | Mosquitofish | <i>Gambusia affinis</i> | 7 |
| | Yellowfin goby | <i>Acanthogobius flavimanus</i> | 1 |
| Radio Tower Pond | Mosquitofish | <i>Gambusia affinis</i> | 1 |
| | Yellowfin goby | <i>Acanthogobius flavimanus</i> | 1 |
| | Unidentified goby | | 1 |

Source: ENVIRON, Berkeley Aquatic Park Fisheries and Benthic Ecology Impact Assessment, 2010.

¹ Gobies were not enumerated by species.

Birds and Wildlife

Aquatic Park supports a variety of avian species common to the area, including both migratory and resident waterfowl, wading birds, and song birds. The lagoons provide overwintering, resting, and foraging habitat for a considerable number of common waterfowl, including bufflehead, gadwall, and American coot. The tidal mudflats provide foraging habitat for common wading birds such as black necked stilt, least sandpiper, long-billed dowitcher, and great blue heron. Upland areas provide nesting and habitat for common songbirds such as Anna's hummingbird, white-crowned sparrow, dark-eyed junco, and chestnut-backed chickadee. Avian species observed during the November 1, 2011 survey are presented in Table 4.2-3.

Although no mammals, reptiles, or amphibians were observed during the site visits conducted by ENVIRON biologists, nocturnally active mammals such as the common raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and black rat (*Rattus rattus*) are likely to occur within Aquatic Park. Common reptile species likely to inhabit Aquatic Park include garter snake (*Thamnopsis elegans*) and alligator lizard (*Elgaria coerulea*). Common amphibian species likely to occur at Aquatic Park include

⁴ Extirpation refers to a condition in which a species no longer exists in its former range (locally extinct).

⁵ U.S. Fish and Wildlife Service, Recovery Plan for the Tidewater Goby (*Eucyclogobius newberryi*), Portland, Oregon: U.S. Fish and Wildlife Service, 2005.

⁶ Ryan Olah, personal communication from USFWS to Marc Beccio, Atkins, September 25, 2012.

Sierran tree frog (*Pseudocharis sierra*). The most notable observation of wildlife, other than birds, was the large aggregation of overwintering Monarch butterflies (*Danaus plexippus*) in the stand of willow and eucalyptus trees on the east side of the park along the railroad berm.

Table 4.2-3
Avian Species Observed at Berkeley Aquatic Park, November 2011

| Common Name | Scientific Name |
|---------------------------|----------------------------------|
| Eared Grebe | <i>Podiceps nigricollis</i> |
| Pied-billed Grebe | <i>Podilymbus podiceps</i> |
| Western Grebe | <i>Aechmophorus occidentalis</i> |
| Brown Pelican | <i>Pelecanus occidentalis</i> |
| Double-crested Cormorant | <i>Phalacrocorax auritus</i> |
| Great Blue Heron | <i>Ardea Herodias</i> |
| Great Egret | <i>Ardea alba</i> |
| Snowy Egret | <i>Egretta thula</i> |
| Black-crowned Night Heron | <i>Nycticorax nycticorax</i> |
| Canada Goose | <i>Branta Canadensis</i> |
| Mallard | <i>Anas platyrhynchos</i> |
| Gadwall | <i>Anas strepera</i> |
| Northern Pintail | <i>Anas acuta</i> |
| Northern Shoveler | <i>Anas clypeata</i> |
| Bufflehead | <i>Bucephala albeola</i> |
| Red-shouldered Hawk | <i>Buteo lineatus</i> |
| Red-tailed Hawk | <i>Buteo jamaicensis</i> |
| Wild Turkey | <i>Meleagris gallopavo</i> |
| American Coot | <i>Fulica Americana</i> |
| American Avocet | <i>Recurvirostra Americana</i> |
| Black-necked Stilt | <i>Himantopus mexicanus</i> |
| Western Sandpiper | <i>Calidris mauri</i> |
| Least Sandpiper | <i>Calidris minutilla</i> |
| Long-billed Dowitcher | <i>Limnodromus scolopaceus</i> |
| Short-billed Dowitcher | <i>Limnodromus griseus</i> |
| Ring-billed Gull | <i>Larus delawarensis</i> |
| Western Gull | <i>Larus occidentalis</i> |
| California Gull | <i>Larus californicus</i> |
| Mourning Dove | <i>Zenaida macroura</i> |
| Rock Pigeon | <i>Columba livia</i> |
| Anna's Hummingbird | <i>Calypte anna</i> |
| Belted Kingfisher | <i>Megasceryle alcyon</i> |
| Nuttall's Woodpecker | <i>Picoides nuttallii</i> |
| Northern Flicker | <i>Colaptes auratus</i> |
| Black Phoebe | <i>Sayornis nigricans</i> |

Table 4.2-3
Avian Species Observed at Berkeley Aquatic Park, November 2011

| Common Name | Scientific Name |
|---------------------------|-------------------------------|
| Steller's Jay | <i>Cyanocitta stelleri</i> |
| American Crow | <i>Corvus brachyrhynchos</i> |
| Chestnut-backed Chickadee | <i>Poecile rufescens</i> |
| California Towhee | <i>Melospiza crissalis</i> |
| White-crowned Sparrow | <i>Zonotrichia leucophrys</i> |
| Song Sparrow | <i>Melospiza melodia</i> |
| Dark-eyed Junco | <i>Junco hyemalis</i> |
| House Finch | <i>Carpodacus mexicanus</i> |
| Lesser Goldfinch | <i>Carduelis psaltria</i> |
| American Goldfinch | <i>Carduelis tristis</i> |
| House Sparrow | <i>Passer domesticus</i> |

Source: ENVIRON, Berkeley Aquatic Park Peer Review of Biological Resources, 2012.

Special-Status Species

Special-status species are defined as plants and animals that are legally protected or that are otherwise considered sensitive by federal, State, or local resource conservation agencies and organizations. For the purposes of this EIR, special-status species are those that fall into one or more of the following categories:

- Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (ESA) or California Endangered Species Act (CESA);
- Species considered as candidates for listing as threatened or endangered under ESA or CESA;
- Species identified by California Department of Fish and Game (CDFG) as Species of Special Concern;
- Animals fully protected in California under the California Fish and Game Code; and
- Plants on CNPS List 1B (plants considered by CNPS to be rare, threatened, or endangered in California and elsewhere) or List 2 (plants considered rare, threatened, or endangered in California but more common elsewhere).

Queries of the USFWS List Generator and CDFG CNDDDB were completed for the “Oakland West, California” U. S. Geological Survey 7.5-minute topographic map to develop a list of potentially occurring special-status species within or near the project site. Table 4.2-4 provides a summary of special status species occurring within or near area depicted by the “Oakland West, California” 7.5-minute topographic map, their habitat requirements, potential to occur within the project area, and the location of nearest occurrence.

Table 4.2-4
Special-Status Species Occurrences within the Area Depicted on the “Oakland West, CA” 7.5-Minute USGS Topographic Map,
Regulatory Status,¹ and Potential to Occur² within the Berkeley Aquatic Park Site

| Common Name | Scientific Name | Regulatory Status ¹ | Habitat | Potential to Occur on Site | Previous Occurrence in Oakland West Quad | Nearest Occurrence to Project Site |
|--------------------------|------------------------------------|--------------------------------|---|--|--|------------------------------------|
| Mammals | | | | | | |
| Salt-marsh harvest mouse | <i>Reithrodontomys raviventris</i> | FE/SE | Heavily vegetated salt marsh dominated by pickleweed (<i>Salicornia</i> sp.). | Low. Although very limited areas within the project site support isolated patches of salt/brackish wetland habitat, this species is not likely to occur due to the high levels of disturbance, small size and low quality of the habitat, and isolation from better quality salt marsh habitat in the local area. The project site does not support this species' constituent habitat elements, including heavily vegetated salt marsh. | Yes; Emeryville Crescent Marsh adjacent to Bay Bridge approach | 1.6 miles |
| Birds | | | | | | |
| Alameda song sparrow | <i>Melospiza melodia pusillula</i> | SC | <i>Salicornia</i> marshes, nests in low <i>Grindelia</i> bushes and <i>Salicornia</i> . | Nesting: Not expected. The isolated patches of salt/brackish wetland habitat on-site are likely too small and disturbed to support a breeding territory for this species. The existing vegetation supporting <i>Salicornia</i> and <i>Grindelia</i> is sparse and limited. Foraging: Low. This species could temporarily forage and/or disperse over the project site when traveling to and from better quality habitat located off-site and in the local area. | Junction of I-80 and I-580 | 1.6 miles |

Table 4.2-4
Special-Status Species Occurrences within the Area Depicted on the “Oakland West, CA” 7.5-Minute USGS Topographic Map,
Regulatory Status,¹ and Potential to Occur² within the Berkeley Aquatic Park Site

| Common Name | Scientific Name | Regulatory Status¹ | Habitat | Potential to Occur on Site | Previous Occurrence in Oakland West Quad | Nearest Occurrence to Project Site |
|--------------------|--|--------------------------------------|--|--|---|---|
| Bald eagle | <i>Haliaeetus leucocephalus</i> | SE | Nests primarily in tall trees or tree snags near water. Forage areas widespread, including estuaries, lakes, rivers. | Nesting: Not expected. The project site does not support suitable nesting habitat for this species. Foraging: Low. Although unlikely, this species could range over the general area and temporarily forage at the project site. | NA ³ | NA |
| Brown pelican | <i>Pelecanus occidentalis californicus</i> | FE | Nesting: Usually on islands, on ground or in low trees. Foraging: ocean, bays, and lagoons. | Nesting: Not expected. The project site does not support suitable nesting habitat for this species. Foraging: Low. This species was observed foraging over the project site during November 2011 surveys. This species could temporarily loaf at the project site and/or forage, disperse, and/or migrate over the site when traveling to and from better quality habitat located off-site and in the local area. | NA | NA |

Table 4.2-4
Special-Status Species Occurrences within the Area Depicted on the “Oakland West, CA” 7.5-Minute USGS Topographic Map,
Regulatory Status,¹ and Potential to Occur² within the Berkeley Aquatic Park Site

| Common Name | Scientific Name | Regulatory Status¹ | Habitat | Potential to Occur on Site | Previous Occurrence in Oakland West Quad | Nearest Occurrence to Project Site |
|-----------------------|--|--------------------------------------|---|---|---|---|
| California black rail | <i>Laterallus jamaicensis coturniculus</i> | FT, ST | Require high marshes with little annual and-or daily fluctuations in water levels. Prefer marshes with unrestricted tidal influences, heavily grown with pickleweed (<i>Salicornia</i> sp.). | Nesting: Not expected. The isolated patches of salt/brackish wetland habitat on-site are likely too small and disturbed to support a breeding territory for this species. The existing vegetation supporting <i>Salicornia</i> is sparse and limited. The low quality of the habitat and high levels of anthropogenic-related disturbance strongly reduce the potential for this species to occur. Foraging: Low. Although unlikely, this species could temporarily forage and/or disperse over the project site when traveling to and from better quality habitat located off-site and in the local area. | Yes; Emeryville Crescent Marsh immediately North of Bay Bridge Toll Plaza | 1.82 miles |

Table 4.2-4
Special-Status Species Occurrences within the Area Depicted on the “Oakland West, CA” 7.5-Minute USGS Topographic Map,
Regulatory Status,¹ and Potential to Occur² within the Berkeley Aquatic Park Site

| Common Name | Scientific Name | Regulatory Status ¹ | Habitat | Potential to Occur on Site | Previous Occurrence in Oakland West Quad | Nearest Occurrence to Project Site |
|-------------------------|--------------------------------------|--------------------------------|--|---|---|------------------------------------|
| California clapper rail | <i>Rallus longirostris obsoletus</i> | FE, SE | Heavily vegetated tidal salt and brackish marshes with sloughs and mudflats. | <p>Nesting: Not expected. The isolated patches of salt/brackish wetland habitat on-site are likely too small and disturbed to support a breeding territory for this species. The existing vegetation supporting <i>Salicornia</i> is sparse and limited. Slough and mudflat habitat is limited. The low quality of the habitat and high levels of anthropogenic-related disturbance strongly reduce the potential for this species to occur.</p> <p>Foraging: Low. Although unlikely, this species could temporarily forage and/or disperse over the project site when traveling to and from better quality habitat located off-site and in the local area.</p> | Yes; Emeryville Crescent Marsh immediately North of Bay Bridge Toll Plaza | 1.82 miles |

Table 4.2-4
Special-Status Species Occurrences within the Area Depicted on the “Oakland West, CA” 7.5-Minute USGS Topographic Map,
Regulatory Status,¹ and Potential to Occur² within the Berkeley Aquatic Park Site

| Common Name | Scientific Name | Regulatory Status¹ | Habitat | Potential to Occur on Site | Previous Occurrence in Oakland West Quad | Nearest Occurrence to Project Site |
|-----------------------|-----------------------------------|--------------------------------------|---|--|---|---|
| California least tern | <i>Sternula antillarum browni</i> | FE | Nesting: abandoned salty flats, sand dunes. Foraging: ocean, bays, and lagoons. | Nesting: Not expected. The project site does not support suitable nesting habitat for this species. Foraging: Possible. This species could temporarily forage and/or disperse over the project site when traveling to and from better quality habitat located off-site and in the local area. | Alameda Naval Air Station | 4.3 miles |
| Common yellowthroat | <i>Geothlypis trichas sinuosa</i> | SC | Requires thick, continuous cover down to water's surface for foraging, tall grasses, willows, tule patches for nesting. | Nesting: Not expected. The existing habitat is not characterized by tall grasses, willows, and tule patches that are typical of this species' nesting requirements. Salinity levels, ornamental plantings, and disturbance limit the establishment of suitable nesting habitat for this species. Foraging: Low. This species could temporarily forage and/or disperse over the project site when traveling to and from better quality habitat located off-site and in the local area. | North side of Bay Bridge Toll Plaza | 1.6 miles |

Table 4.2-4
Special-Status Species Occurrences within the Area Depicted on the “Oakland West, CA” 7.5-Minute USGS Topographic Map,
Regulatory Status,¹ and Potential to Occur² within the Berkeley Aquatic Park Site

| Common Name | Scientific Name | Regulatory Status ¹ | Habitat | Potential to Occur on Site | Previous Occurrence in Oakland West Quad | Nearest Occurrence to Project Site |
|--------------------------|--|--------------------------------|--|---|--|------------------------------------|
| Double-crested cormorant | <i>Phalacrocorax auritus</i> | SC | Rookery sites – colonial nester on coastal cliffs, offshore islands, and along lake margins in interior part of California. | Nesting/Rookery site: Not expected. The project site does not support suitable nesting habitat for this species. Foraging: This species was observed foraging over the project site during November 2011 surveys. This species could temporarily loaf at the project site and/or forage, disperse, and/or migrate over the site. | NA | NA |
| Western snowy plover | <i>Charadrius alexandrinus nivosus</i> | FT | Common on sandy marine and estuarine shores. Nests primarily on sandy shores, sand dunes and salt pond levees with sandy, gravelly, or friable soil substrate. | Nesting: Not expected. The project site does not support suitable nesting habitat for this species. Foraging: Not expected. Although unlikely, this species could migrate and/or disperse over the project site, but would not be expected to forage due to lack of sandy habitat. | No | NA |

Reptiles

| | | | | | | |
|----------------------------|--|--------|---|---|----|----|
| Alameda whipsnake | <i>Masticophis lateralis</i> | FT, ST | Chaparral, shrub communities, occasionally oak-bay woodland. | Not expected. The project site does not support suitable habitat for this species. | No | NA |
| San Francisco garter snake | <i>Thamnophis sirtalis tetrataenia</i> | FE, SE | Densely vegetated ponds, lakes, marshes, or sloughs near open grasslands. | Not expected. The project site is highly disturbed and likely outside of the current range of this species. | No | NA |

Table 4.2-4
Special-Status Species Occurrences within the Area Depicted on the “Oakland West, CA” 7.5-Minute USGS Topographic Map,
Regulatory Status,¹ and Potential to Occur² within the Berkeley Aquatic Park Site

| Common Name | Scientific Name | Regulatory Status¹ | Habitat | Potential to Occur on Site | Previous Occurrence in Oakland West Quad | Nearest Occurrence to Project Site |
|--------------------------------------|--------------------------------|--------------------------------------|--|---|---|---|
| Amphibians | | | | | | |
| California red-legged frog | <i>Rana draytonii</i> | FT | Perennial water bodies (ponds, marshes, slow moving streams) with vegetated shorelines, somewhat tolerant of brackish water. | Not expected. The project site is highly disturbed and likely outside of the current range of this species. | NA | NA |
| California tiger salamander | <i>Ambystoma californiense</i> | FT, ST | Grasslands and open oak woodlands, necessary components include ground squirrel or gopher burrows for adult and juvenile aestivation; breeding habitat consisting of seasonally inundated vernal pools, stock ponds, seasonal wetlands. | Not expected. The project site does not support suitable habitat for this species. | Yes (Historical-1896) population has been declared extirpated (Alameda) | NA |
| Central California Coastal steelhead | <i>Oncorhynchus mykiss</i> | FT | Spawning and rearing (1-2 years): Upper reaches of coastal streams and rivers from the Russian River to Aptos Creek, streams and rivers tributary to the San Francisco Bay downstream of Chippis Island. Rearing (smolts): San Francisco Bay and coastal estuaries. Adult foraging: Pacific Ocean and San Francisco Bay. | Low (smolts ⁴). Although unlikely, smolts could occur within portions of the project site during certain times of year and if water quality conditions are favorable. However, existing water quality stressors, lack of suitable cover and refuge, and prevalence of predator species strongly limit the potential for this and other native fish species to occur under current conditions. No salmonids were sampled or identified during previous survey efforts. | NA | NA |

Table 4.2-4
Special-Status Species Occurrences within the Area Depicted on the “Oakland West, CA” 7.5-Minute USGS Topographic Map,
Regulatory Status,¹ and Potential to Occur² within the Berkeley Aquatic Park Site

| Common Name | Scientific Name | Regulatory Status¹ | Habitat | Potential to Occur on Site | Previous Occurrence in Oakland West Quad | Nearest Occurrence to Project Site |
|--|---------------------------------|--------------------------------------|---|---|---|---|
| Central Valley steelhead | <i>Oncorhynchus mykiss</i> | FT | Spawning and rearing (1-2 years): Upper reaches of streams and rivers tributary and including to the Sacramento and San Joaquin rivers. Rearing (smolts): Sacramento-San Joaquin Delta, San Francisco Bay. Adult foraging: San Francisco Bay and Pacific Ocean. | Low (smolts). Although unlikely, smolts could occur within portions of the project site during certain times of year and if water quality conditions are favorable. However, existing water quality stressors, lack of suitable cover and refuge, and prevalence of predator species strongly limit the potential for this and other native fish species to occur under current conditions. No salmonids were sampled or identified during previous survey efforts. | NA | NA |
| Central Valley spring-run Chinook salmon | <i>Oncorhynchus tshawytscha</i> | FT | Spawning: Sacramento River and cold-water tributaries. Rearing (fry): Sacramento River tributaries. Rearing (smolts): Sacramento-San Joaquin Delta, San Francisco Bay. Adult foraging: Pacific Ocean. | Low (smolts). Although unlikely, smolts could occur within portions of the project site during certain times of year and if water quality conditions are favorable. However, existing water quality stressors, lack of suitable cover and refuge, and prevalence of predator species strongly limit the potential for this and other native fish species to occur under current conditions. No salmonids were sampled or identified during previous survey efforts. | NA | NA |

Table 4.2-4
Special-Status Species Occurrences within the Area Depicted on the “Oakland West, CA” 7.5-Minute USGS Topographic Map,
Regulatory Status,¹ and Potential to Occur² within the Berkeley Aquatic Park Site

| Common Name | Scientific Name | Regulatory Status¹ | Habitat | Potential to Occur on Site | Previous Occurrence in Oakland West Quad | Nearest Occurrence to Project Site |
|--|---------------------------------|--------------------------------------|---|---|---|---|
| Central Valley winter-run Chinook salmon | <i>Oncorhynchus tshawytscha</i> | FE | Spawning: Sacramento River and cold-water tributaries. Rearing (fry): Sacramento River tributaries. Rearing (smolts): Sacramento-San Joaquin Delta, San Francisco Bay. Adult foraging: Pacific Ocean. | Low (smolts). Although unlikely, smolts could occur within portions of the project site during certain times of year and if water quality conditions are favorable. However, existing water quality stressors, lack of suitable cover and refuge, and prevalence of predator species strongly limit the potential for this and other native fish species to occur under current conditions. No salmonids were sampled or identified during previous survey efforts. | NA | NA |
| Coho salmon | <i>Oncorhynchus kisutch</i> | FE | Spawning: Coastal streams and rivers; historically in streams tributary to San Francisco Bay. | Not expected. The project site does not provide suitable habitat or environmental conditions for this species. | NA | NA |
| Delta smelt | <i>Hypomesus transpacificus</i> | FT, SE | Spawning: Sacramento-San Joaquin Delta. Juvenile rearing: Sacramento-San Joaquin Delta. Adult foraging: Sacramento-San Joaquin Delta. | Not expected. The project site does not provide suitable habitat or environmental conditions for this species. | NA | NA |

Table 4.2-4
Special-Status Species Occurrences within the Area Depicted on the “Oakland West, CA” 7.5-Minute USGS Topographic Map,
Regulatory Status,¹ and Potential to Occur² within the Berkeley Aquatic Park Site

| Common Name | Scientific Name | Regulatory Status¹ | Habitat | Potential to Occur on Site | Previous Occurrence in Oakland West Quad | Nearest Occurrence to Project Site |
|--------------------|--------------------------------|--------------------------------------|--|--|---|---|
| Longfin smelt | <i>Spirinchus thaleichthys</i> | ST | Spawning: Sacramento-San Joaquin Delta. Juvenile and adult foraging: Sacramento-San Joaquin Delta and San Francisco Bay. | Low. Although unlikely, this species could occur within the project site during certain times of year and if water quality conditions are favorable. However, existing water quality stressors, lack of suitable cover and refuge, and prevalence of predator species strongly limit the potential for this and other native fish species to occur under current conditions. The existing habitat and environmental conditions that characterize the site are not representative of this species' habitat. No longfin smelt were sampled or identified during previous survey efforts. | NA | NA |

Table 4.2-4
Special-Status Species Occurrences within the Area Depicted on the “Oakland West, CA” 7.5-Minute USGS Topographic Map,
Regulatory Status,¹ and Potential to Occur² within the Berkeley Aquatic Park Site

| Common Name | Scientific Name | Regulatory Status¹ | Habitat | Potential to Occur on Site | Previous Occurrence in Oakland West Quad | Nearest Occurrence to Project Site |
|-------------------------------|-----------------------------------|--------------------------------------|---|--|--|---|
| Tidewater goby | <i>Eucyclogobius newberryi</i> | FE | Estuaries, and lagoons with sand or mud bottoms, vegetative cover. | Not expected. This species has been extirpated from the area and is not expected to occur. | Yes. Collected at Berkeley Aquatic park (historical-1950). USFWS considers extirpated from San Francisco Bay, and the USFWS does not consider the lagoons within Aquatic Park as potential habitat for tidewater goby. | Onsite |
| Invertebrates | | | | | | |
| Bay checkerspot | <i>Euphydryas editha bayensis</i> | FT | Shallow serpentine-derived soils in native grasslands supporting larval host plants: native plantain, (<i>Plantago erecta</i>), owl's clover (<i>Castilleja densiflorus</i>). | Not expected. The project site does not support suitable habitat for this species. | No | NA |
| Callippe silverspot butterfly | <i>Speyeria callippe</i> | FE | Native grassland and associated habitat. | Not expected. The project site does not support suitable habitat for this species. | Yes (historical-1997) Population in an Alameda city park has been declared extirpated | |

Table 4.2-4
Special-Status Species Occurrences within the Area Depicted on the “Oakland West, CA” 7.5-Minute USGS Topographic Map,
Regulatory Status,¹ and Potential to Occur² within the Berkeley Aquatic Park Site

| Common Name | Scientific Name | Regulatory Status ¹ | Habitat | Potential to Occur on Site | Previous Occurrence in Oakland West Quad | Nearest Occurrence to Project Site |
|---------------------------|---|--------------------------------|---|--|--|------------------------------------|
| Mission blue butterfly | <i>Icaricia icarioides missionensis</i> | FE | Marin, San Francisco, and San Mateo counties; larval host plants are three lupine species (<i>Lupinus albifrons</i> , <i>Lupinus formosus</i> , and <i>Lupinus variicolor</i>). | Not expected. The project site does not support suitable habitat for this species. | No | NA |
| San Bruno elfin butterfly | <i>Callophrys mossii bayensis</i> | FE | Rocky slopes and ledges, especially east facing, larval host plant is stonecrop (<i>Sedum spathulifolium</i>). | Not expected. The project site does not support suitable habitat for this species. | No | NA |

Plants

| | | | | | | |
|-------------------------|---|--------|--|---|--|-----------|
| Beach layia | <i>Layia carnosa</i> | FE, 1B | Sparsely vegetated semi-stabilized dunes; usually behind foredunes. | Not expected. The project site does not support suitable habitat for this species. | San Francisco Sand Dunes, San Francisco | 12 miles |
| California sea blite | <i>Suaeda californica</i> | FE | Tidally influenced salt marshes, most commonly found in the narrow ecotone between salt marsh and stable dune scrub communities occurring at the edge of the salt marsh. | Not expected. The project site does not support suitable habitat for this species. | Extirpated from San Francisco Bay (1958); re-introduced at Crescent Marsh in 2009. | 1.8 miles |
| Dune gilia | <i>Gilia capitata</i> ssp. <i>chamissonis</i> | 1B | Coastal dune, coastal scrub | Not expected. The project site does not support suitable habitat for this species. | Yerba Buena Island | 4.7 miles |
| Point Reyes bird's-beak | <i>Cordylanthus maritimus</i> ssp. <i>palustris</i> | 1B | Usually in salt marsh with <i>Salicornia</i> , <i>Spartina</i> , <i>Dishchilis</i> , <i>Jaumea</i> , etc. | Low. Marginal salt/brackish wetland habitat occurs within limited portions of the site. This species was not observed during previous survey efforts. | Emeryville and Berkeley shoreline | 1.5 miles |

Table 4.2-4
Special-Status Species Occurrences within the Area Depicted on the “Oakland West, CA” 7.5-Minute USGS Topographic Map,
Regulatory Status,¹ and Potential to Occur² within the Berkeley Aquatic Park Site

| Common Name | Scientific Name | Regulatory Status ¹ | Habitat | Potential to Occur on Site | Previous Occurrence in Oakland West Quad | Nearest Occurrence to Project Site |
|---------------------|---|--------------------------------|--|--|--|------------------------------------|
| Saline clover | <i>Trifolium depauperatum</i> var. <i>hydrophilum</i> | 1B | Marshes and swamps, valley foothill and grassland vernal pools, mesic alkaline sites | Not expected. The project site does not support suitable habitat for this species. | Oakland | 3.5 miles |
| Santa Cruz tarplant | <i>Holocarpha macradenia</i> | FT, 1B | Coastal prairie, valley and foothill grassland; light sandy soil, often with non-natives | Not expected. The project site does not support suitable habitat for this species. | Adeline Station near Berkeley | 1.6 miles |

¹ Regulatory Status

FE = Federally endangered

FT = Federally threatened

SE = State endangered

ST = State threatened

SC = State species of concern

1B = California Native Plant Society List 1B

² Potential to Occur Definitions

Not Expected to Occur - There are no present or historical records of the species occurring on or in the immediate vicinity (within 5 miles) of the project site.

The diagnostic habitats strongly associated with the species do not occur on or in the immediate vicinity of the project site. The project site is located well outside the species known range and/or elevation limits.

Low Potential to Occur - There is a historical record of the species and potentially suitable habitat on or in the vicinity of the project site, but existing conditions, such as density of cover, prevalence of non-native species, evidence of disturbance, limited habitat area, and isolation substantially reduce the possibility that the species would occur. The project site is located just outside the species known range and/or elevation limits.

Moderate Potential to Occur -The diagnostic habitat associated with the species occurs on or in the immediate vicinity of the project site, but there is not a recorded occurrence of the species within the immediate vicinity (within 5 miles). Some species that contain extremely limited distributions may be considered moderate, even if there is a recorded occurrence in the immediate vicinity. The project site is located within the species known range and/or elevation limits.

High Potential to Occur - There is both suitable habitat associated with the species and a historical record of the species on or in the immediate vicinity of the project site (within 5 miles). The project site is located within the species known range and/or elevation limits.

Species Present - The species was observed on within the project site at the time of the survey or during a previous biological survey.

³Information not available.

⁴Smolts are emigrating juvenile salmonids that have undergone physiological processes that allow them to adapt to brackish and saltwater conditions.

Regulatory Setting

There are a number of federal and State regulations that relate specifically to the protection and conservation of biological resources. The following laws, regulations, and ordinances are relevant to the project area.

Federal

Federal Endangered Species Act (FESA)

The federal Endangered Species Act was enacted in 1973. Under the FESA, the Secretary of the Interior and the Secretary of Commerce, jointly have the authority to list a species as threatened or endangered (16 United States Code [USC] 1533[c]). FESA is administered by both the National Marine Fisheries Service (NMFS) and the USFWS. NMFS is accountable for animals that spend most of their lives in marine waters, including marine fish, most marine mammals, and anadromous fish such as Pacific salmon. The USFWS is accountable for all other federally-listed plants and animals.

Pursuant to the requirements of FESA, an agency reviewing a Preferred Project within its jurisdiction must determine whether any federally listed threatened or endangered species may be present in the project area and determine whether the Preferred Project would have a potentially significant impact on such species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC 1536[3], [4]). Therefore, project-related impacts to these species or their habitats would be considered significant and would require mitigation.

The Sacramento Fish and Wildlife Office maintain a list of “species of concern” that receive special attention from federal agencies during environmental review, although they are not otherwise protected under FESA. Project-related impacts to such species would also be considered significant under California Environmental Quality Act (CEQA) Guidelines Section 15380 and would require mitigation.

Projects that would result in “take” of any federally-listed threatened or endangered species are required to obtain authorization from NMFS and/or USFWS through either Section 7 (interagency consultation) or Section 10(a) (incidental take permit) of FESA, depending on whether the federal government is involved in permitting or funding the project. The Section 7 authorization process is used to determine if a project with a federal nexus would jeopardize the continued existence of a listed species and what mitigation measures would be required to avoid jeopardizing the species. The Section 10(a) process allows take of endangered species or their habitat in non-federal activities.

Migratory Bird Treaty Act of 1918

The federal Migratory Bird Treaty Act (MBTA) makes it unlawful to “take” (kill, harm, harass, etc.) any migratory bird listed in 50 CFR 10, including their nests, eggs, or products. Migratory birds include geese, ducks, shorebirds, raptors, songbirds, and many others. Most of the birds that

commonly occur within the project area, like Brewer's blackbird, western scrub-jay, house finch, and American crow, are protected under the MBTA.

Clean Water Act, Section 404

The objective of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Section 301 prohibits the discharge of any pollutant into the nation's waters without a permit, and Section 402 establishes the permit program. Under Section 404 of the CWA, the Corps has the authority to regulate activities that discharge fill or dredge material into wetlands or other waters of the U.S. The Corps implements the federal policy embodied in Executive Order 11990, which is intended to result in no-net-loss of wetland values or acres.

Clean Water Act, Section 401

The State Water Resources Control Board (SWRCB) has authority over wetlands through Section 401 of the CWA, which requires that an applicant for a Section 404 permit (to discharge dredged or fill material into waters of the United States) first obtain certification from the appropriate state agency stating that the fill is consistent with the State's water quality standards and criteria. In California, the authority to either grant certification or waive the requirement for permits is delegated by the SWRCB to the nine regional boards. The San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) is the appointed authority for Section 401 compliance in the project area. A request for certification or waiver is submitted to the regional board at the same time that an application is filed with the Corps. The regional board has 60 days to review the application and act on it. Because no Corps permit is valid under the CWA unless "certified" by the state, these boards may effectively veto or add conditions to any Corps permit.

State

California Endangered Species Act (CESA)

The California Endangered Species Act was enacted in 1984. Under the CESA, the California Fish and Game Commission (CFGC) has the responsibility for maintaining a list of threatened species and endangered species. CDFG also maintains lists of species of special concern which impacts would be considered significant under CEQA Guidelines Section 15380 and could require mitigation. Pursuant to the requirements of CESA, an agency reviewing a Preferred Project within its jurisdiction must determine whether any State-listed endangered or threatened species may be present in the project area and determine whether the Preferred Project would have a potentially significant impact on such species. In addition, CDFG encourages informal consultation on any project which may impact a candidate species. CESA prohibits the take of California listed animals and plants in most cases, but CDFG may issue incidental take permits under special conditions.

Sections 3503, 3503.5, 3800 of the Fish and Game Code

These sections of the Fish and Game Code prohibit the "take, possession, or destruction of birds, their nests or eggs." Disturbance that causes nest abandonment and/or loss of reproductive effort (killing or

abandonment of eggs or young) is considered a “take.” Removal of vegetation is the most common action that can lead to a violation of these code sections.

The McAteer-Petris Act (California Government Code 66600–66682)

The McAteer-Petris Act created the San Francisco Bay Conservation and Development Commission (BCDC) in 1965. The mission of BCDC was to preserve San Francisco Bay from indiscriminate filling. BCDC’s first task was compilation of a comprehensive study of the Bay and determining how future development of the Bay should occur. This effort resulted in the San Francisco Bay Plan in 1968. In 1969 the findings and policies of the Bay Plan were incorporated into the McAteer-Petris Act which was amended making BCDC a permanent state agency. The Bay Plan continues to evolve and remains the guiding document for BCDC’s actions. Section 66610 of the McAteer-Petris Act establishes the boundaries of San Francisco Bay in relation to BCDC’s jurisdiction. Essentially, all areas below the mean high tide line and an area within a shoreline band that extends landward for 100 feet from the mean high tide line are subject to their jurisdiction. Section 66632 of the McAteer-Petris Act establishes the permitting process for projects which would place fill in, on, or over any part of BCDC’s jurisdiction as defined in Section 66610.

Local

City of Berkeley General Plan

The following policy from the Environmental Management Element of the City’s General Plan pertains to the Preferred Project:

Policy EM-28 Natural Habitat: Restore and protect valuable, significant, or unique natural habitat areas.

Actions:

- A. Restore the natural habitat and improve water quality in the Aquatic Park lagoon
- B. Where appropriate, balance increased use of open space and public lands with enhancement of natural habitat
- C. Preserve and enhance coastal and riparian areas and water flows necessary to support natural habitat and wildlife

City of Berkeley Municipal Code

Chapter 11.56 of the Berkeley Municipal Code establishes policies and uses that provide special protection to San Francisco Bay shoreline ecology, including but not limited to wetlands, mudflats, marshes, and tidelands, among others. It also is intended to protect open space and enhance the recreational uses and low density character of the entire waterfront area.

Chapter 12.44 of the Berkeley Municipal Code establishes requirements for planting trees, shrubs, and plants in specific locations within the city. It also sets forth the process for cutting, trimming, or removing any tree, shrub, or plant in those locations, and prohibits use of materials such as salt, oil, or herbicide that could be deleterious to plant growth.

City of Berkeley Coast Live Oak Tree Ordinance

The Coast Live Oak Tree Ordinance (Ordinance No. 6,905-N.S., adopted March 9, 2006) establishes a moratorium on the removal of any single stem Coast Live Oak tree of a circumference of 18 inches or more and any multi-stemmed Coast Live Oak with an aggregate circumference of 26 inches or more at a distance of 4 feet up from the ground.

Impacts and Mitigation Measures

Standards of Significance

The Preferred Project would have a significant impact on biological resources if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFG or USFWS;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.

Methodology

The analysis of potential biological impacts associated with the Preferred Project is based on the Fisheries and Benthic Ecology Impact Assessment and the Peer Review of Biological Resources prepared by ENVIRON, the Aquatic Park Improvement Program Technical Report prepared by Laurel Marcus and Associates, and the results of the CDFG CNDDDB and USFWS database queries for the

“Oakland West, California” 7.5-minute quadrangle.⁷ Special-status species listed in Table 4.2-4 that were judged to have no suitable habitat in or adjacent to the project site are not addressed further in this section. Project-related impacts to special-status bird species are addressed only if suitable nesting habitat occurs on or adjacent to the project site.

Impacts Not Evaluated In Detail

The project site is not within an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan. As such, implementation of the Preferred Project would not conflict with such a plan, resulting in no impact.

Environmental Analysis

BR-1 Construction of the Preferred Project could have a substantial adverse effect, either directly, or indirectly, through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS. (PS)

As described in the 2010 Fisheries and Benthic Ecology Impact Analysis and the 2012 Peer Review of Biological Resources prepared by ENVIRON for this Draft EIR, the site visits, database queries, and literature review did not identify any special-status or listed plant or animal species within the project site. Further, no special-status species were determined to have a high potential to occur (see Table 4.2-4), and no special-status species would be expected to use the site as permanent habitat.

However, several special-status bird species known to the region were determined to have a low potential to forage, disperse, and/or migrate over the project site. In addition, although unlikely, several special-status fishes could temporarily be at the project site if environmental conditions are favorable.

Construction and restoration activities could result in temporary and minor short-term impacts as a result of removal and temporary disturbance of the low-quality terrestrial and aquatic habitat, in addition to developed upland areas within the project site. This would include potential foraging habitat for several special-status species that have a low potential to temporarily forage over the site. These species would be temporarily displaced from the construction areas and would have to forage over alternate habitat located on and in the immediate vicinity of the site during project construction. Temporary impacts on foraging habitat for special-status species would be considered *less than significant*, however, given the limited area of low quality habitat proposed to be disturbed and the prevalence of alternate foraging habitat in the local area. Further, project implementation would result in a net increase

⁷ California Department of Fish and Game (CDFG) Biogeographic Data Branch, California Natural Diversity Database (CNDDDB), RareFind Version 3.1.0, June 2012; CDFG State and Federally Listed Endangered, Threatened, and Rare Plants of California, California Department of Fish and Game, Natural Diversity Data Base, Sacramento, California, June 2012; U.S. Fish and Wildlife Service (USFWS), Species Reports, http://ecos.fws.gov/tess_public; USFWS, Critical Habitat Portal, <http://criticalhabitat.fws.gov>.

of the affected habitat types, thereby ensuring full compensation and no-net-loss at the site over the long-term, and there would be no adverse permanent effects.

Please see Impact BR-3 for the evaluation of potential impacts on aquatic and wetland habitat.

- BR-2** *Operation of the Preferred Project would not have a substantial adverse effect, either directly, or indirectly, through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS. (LTS)*

Removal of non-native invasive plant species and replacement with native plant species would increase the overall value of the habitat by restoring the plant community and providing greater potential for use by special-status wildlife species (see also Impact BR-4). Successful completion of habitat restoration activities for the Preferred Project is expected to result in an overall increase in habitat quantity and quality, including improved water quality conditions in the lagoons, that supports special-status species. As a result, the Preferred Project would not result in any adverse direct or indirect impacts on special-status species or habitat over the long-term, and the impact would be *less than significant*.

- BR-3** *Construction of the Preferred Project could have a substantial adverse effect on wetland habitat. (PS)*

Construction activities would result in temporary impacts on existing aquatic and benthic habitat and wetland habitat, including direct impacts from disturbance of soils adjacent to the lagoons, wetland construction, elevation of Bird Island, dredging and filling, and indirect impacts from sedimentation and increases in turbidity, which could adversely affect water and wetland resources and aquatic/benthic species. This would be a *potentially significant* impact. The reader is referred to Impact HYD-1 in Section 4.3, Hydrology and Water Quality, for additional information concerning potential water quality effects during construction.

MITIGATION MEASURE. Temporary and permanent impacts on wetland habitat types, including jurisdictional waters and wetlands, would be reduced to *less-than-significant* levels through the implementation of Mitigation Measures HYD-1.1 through HYD-1.4 and HYD-4.1 in Section 4.3, Hydrology and Water Quality. These measures require that if turbidity or other water quality parameters may be exceeded, turbidity containment measures, best management practices, soil stabilization, or equally effective controls would be used during construction at appropriate locations. The specific measures to be implemented would be determined in conjunction with the protocols and performance standards outlined in those mitigation measures. These measures would be fully protective of wetland and aquatic habitat. In addition, permits authorizing the proposed activities would be required in addition to the preparation of applications, plans, and other documentation during permit processing in accordance with local, State, and federal regulations, as set forth in those mitigation measures.

BR-3.1 Wetland Habitat Protection. Implement Mitigation Measures HYD-1.1, HYD-1.2, HYD-1.3, HYD-1.4, and HYD-4.1.

BR-4 Operation of the Preferred Project would not have a substantial adverse effect on wetland habitat. (LTS)

The following areas at the project site would undergo habitat restoration efforts to improve and increase overall wetland habitat within the project site.

- Creation of 1.48 acres of salt/brackish wetlands at the Rowing Club site.
- Restoration of shoreline habitat surrounding the lagoons by removal of non-native vegetation and replacement with native plant species.
- Restoration of freshwater wetland and creek habitats by removal of non-native vegetation and replacement with native plant species.

Salt/Brackish Wetlands. The Preferred Project would create 1.48 acres of salt/brackish wetland habitat at the Rowing Club site (see Figure 3-12, Plan View of Proposed Salt/Brackish Wetland at Rowing Club Site). The Rowing Club site was selected for wetland restoration due to its relatively large size, few shoreline trees, and adjacency to an existing intertidal flat of pickleweed marsh that would result in a large, valuable wildlife area. The Rowing Club site has little value as wetland or upland habitat. Creation of a salt/brackish wetland at the Rowing Club site would entail the excavation of the existing contour to a depth of -1.5 feet Berkeley Datum. Excavation would generate approximately 6,282 cubic yards of soil. Measures would be taken to avoid affecting the existing strip of pickleweed and the intertidal flat during construction that could provide habitat for special-status species. The outer edge of the excavation would extend to near the road edge but the Monterey cypress trees along the southern edge of the site would be retained. A 25-foot buffer would be retained between the Rowing Club building and the wetland site to reduce the potential for disturbance of the wetland area. In addition, a small vegetated berm would be constructed to buffer the wetland from the road along the western edge of the project site and to reduce disturbance from dogs and people. The berm would require approximately 560 cubic yards of material for construction.

Once excavation is complete, the salt/brackish wetland would be re-vegetated with native salt marsh plants, and it is expected that other vegetation would colonize naturally. Pickleweed would be retained along the site's eastern edge and would be expected to spread and colonize the new excavated area. The western edge of the site would be planted with high marsh plants including alkali heath (*Frankenia grandifolia*), fat hen (*Atriplex patula*), jaumea (*Jaumea carnosa*), salt grass (*Distichlis spicata*), gumplant (*Grindelia stricta* var. *stricta*), and salt marsh rosemary (*Limonium californicum*). Transition zone plants including California buckwheat (*Erigeron fasciculatum*), coyote brush (*Baccharis pilularis*), and bunchgrass would be planted along the berm. Restoration of the salt/brackish wetland at the Rowing Club site

through excavation (to create the wetland) and re-vegetation would improve the viability of this area to support plants and wildlife compared to existing conditions. The protective measures described above would ensure that construction activities required for the wetland restoration would not adversely impact the existing environment. Creation of 1.48 acres of salt/brackish wetland habitat from the existing upland area would result in high-quality wetland habitat that could potentially support sensitive animal species known to the region sometime in the future, including salt-marsh harvest mouse, Alameda song sparrow, California black rail, California clapper rail, and common yellowthroat. Because the Preferred Project would not have an adverse impact on salt/brackish wetland habitat, impacts would be *less than significant*. Further, over the long-term, operation of the Preferred Project is anticipated to have a beneficial effect on salt/brackish wetland habitat and associated plant and wildlife species.

Shoreline and Freshwater Wetland Areas. As part of the Preferred Project, replacement of invasive, non-native vegetation with native plant species would be completed in three stages. Stage 1 would include the removal of invasive plant species such as ice plant, tamarisk, cotoneaster, fennel, pepperweed, firethorn, and ivy from the shoreline of the Radio Tower Pond. Invasive plant removal in Stage 1 would also include removal of other non-native species in upland areas of the Park, such as Himalayan blackberry, pampas grass, broom, giant reed, and acacia and eucalyptus seedlings, followed by plantings of native species such as beach aster (*Erigeron glaucus*), Douglas iris (*Iris douglasiana*), monkey flower (*Mimulus* sp.), and other low-growing native plants. Stage 2 would include removal of invasive plant species from the freshwater wetland habitat. Stage 3 would include removal of large eucalyptus and acacia trees, which make up the majority of the acreage of invasive plants in the Park. Stage 3 invasive removal would occur concurrently with planting of native tree species such as Monterey cypress (*Cupressus macrocarpa*), California bay laurel (*Umbellularia californica*), and Monterey pine (*Pinus radiata*). Removal of non-native invasive plant species and replacement with native plant species would increase the overall value of the habitat by restoring the plant community and providing greater potential for use by special-status wildlife species. Because the Preferred Project would not have an adverse impact on shoreline areas, impacts would be *less than significant*. Further, over the long-term, operation of the Preferred Project is anticipated to have a beneficial effect on shoreline freshwater habitat and associated plant and wildlife species.

BR-5 The Preferred Project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. (LTS)

Construction Impacts

Construction and restoration activities would result in impacts to limited portions of the project site, including areas supporting wildlife habitat. The existing habitat does not support any wildlife nursery sites or contribute to any wildlife corridors. The existing habitat is low quality and fragmented by existing developments and physical impediments to wildlife movement. Some special-status animal species, including several fish, have a low potential to temporarily

use the project site when environmental conditions are favorable. Individuals could be deterred and/or displaced from construction areas during construction; however, these individuals would not be expected to use the habitat as a nursery site or corridor, and alternate habitat exists in the immediate vicinity of the site that would be available during construction. Therefore, construction of the Preferred Project would not be expected to adversely affect any wildlife nursery sites or corridors, and impacts would be *less than significant*.

Operational Impacts

Terrestrial Wildlife. The project site is surrounded by a highly urbanized and disturbed environment. As such, the site is not part of a larger natural wildlife corridor, and the movement of resident terrestrial species is currently inhibited by the urban, commercial, and industrial development and associated infrastructure surrounding the project site. No known wildlife corridors or nursery sites occur on or in the immediate vicinity of the project site. Further, no habitat within the site would contribute to the assembly of any corridors or would be expected to serve as a nursery site or facilitate the movement of wildlife to and from a nursery site.

Aquatic Species. In terms of aquatic species, as described under BR-1, above, the project site lagoons do not support populations of listed anadromous or other migratory fish species. However, the 2010 Fisheries and Benthic Ecology Impact Analysis and USWFS query identified a low potential for several special-status migratory fish species to occur within the project site lagoons via entry through the tidal tubes connecting the lagoons to the San Francisco Bay. Under the existing conditions, the tide tubes that connect the Aquatic Park lagoons and the Bay are compromised and tidal exchange is severely limited.

Implementation of the Preferred Project would restore portions of the project site to better support native wildlife communities and would not increase the amount of developed land in the project area. Further, implementation would improve the connection between the Aquatic Park lagoons and the Bay through restoration of the tide tubes and, therefore, would enhance the ability of aquatic species to move between the project site and the open waters of the Bay, and would improve water quality parameters by increasing tidal exchange. Because operation of the Preferred Project would not adversely affect wildlife corridors or nursery sites, the impact would be *less than significant*. On a long-term basis, the restoration elements of the Preferred Project are expected to have a beneficial effect on animal species that have the potential to occur within the local area, including aquatic species.

BR-6 The Preferred Project has the potential to impact nesting birds. (PS)

Shoreline Areas. The project site contains a number of native and non-native trees, shrubs, and herbaceous plants that provide nesting habitat for a variety of bird species. Implementation of the Preferred Project, specifically, habitat restoration activities, would result in the removal of trees at the project site. As described for Impact BR-2, above, during Stage 3 of invasive species removal along the shoreline areas, large eucalyptus and acacia trees would be removed.

If nesting migratory birds are present (i.e., nests containing eggs or hatchlings), tree and shrub removal associated with the Preferred Project could result in the loss of those birds caused by the direct mortality of adult or young birds, nest destruction, or disturbance of nesting native migratory bird species, resulting in nest abandonment and/or the loss of reproductive effort. Native migratory bird species are protected by both State (CDFG Code Sections 3503 and 3513) and federal (MBTA of 1918) laws. Disruption of nesting birds, resulting in the abandonment of active nests, or the loss of active nests through removal of vegetation, would be a *potentially significant* impact.

Bird Island. Under the Preferred Project, Bird Island, located in the Main Lagoon, may undergo habitat improvements. The elevation of Bird Island would be raised up to 5 feet and the island would be re-vegetated to provide nesting and roosting habitat for various bird species. Boulder riprap would be added to the existing riprap around the periphery of Bird Island, and fill material dredged from Main Lagoon would be placed within the bounds of the rock riprap to increase the elevation of the of the island. Native trees such as Monterey cypress (*Cupressus macrocarpa*), California bay laurel (*Umbellularia californica*), Monterey pine (*Pinus radiata*), and potentially others would be planted on the island to provide nesting and roosting habitat. These species can withstand wind and often grow on coastal bluffs and hills. These trees would take several years to grow large enough to provide bird nesting and roosting habitat and increase soil stability. Understory vegetation including coyote brush, gumplant, bunchgrasses, rushes, and sedges would also be planted to provide additional nesting and refuge areas.

Restoration activities associated with raising the elevation of Bird Island, such as placement of soil on the island to raise the elevation, could result in the loss of ground-nesting birds caused by direct mortality of birds, nest destruction, or nest abandonment and loss of breeding effort. Disruption of ground-nesting birds, resulting in the abandonment of active nests, or the loss of active nests through placement of soil or removal of vegetation, would be considered a *potentially significant* impact on nesting bird species occurring in Main Lagoon.

MITIGATION MEASURE. The following mitigation measures would reduce the potentially significant impacts on nesting migratory birds at the project site to *less than significant*. (LTS)

BR-6.1 *Identify and Protect Nesting Migratory Birds at the Project Site.* The City shall implement the following measures to reduce impacts to nesting migratory birds:

- a. To facilitate compliance with State and federal law (Fish and Game Code and the MBTA) and prevent impacts to nesting birds, the City shall avoid the removal of trees, shrubs, or weedy vegetation February 1 through August 31 during the bird nesting period. If no vegetation or tree removal is proposed during the nesting period, no surveys are required. If it is not feasible to avoid the nesting period, a survey for nesting birds shall be conducted by a qualified wildlife biologist no earlier than seven days prior to the removal of trees, shrubs, weedy vegetation, buildings, or other construction activity.

- b. Survey results shall be valid for the tree removals for 21 days following the survey. If the trees are not removed within the 21-day period, then a new survey shall be conducted. The area surveyed shall include all construction areas as well as areas within 150 feet outside the boundaries of the areas to be cleared or as otherwise determined by the biologist.
- c. In the event that an active nest for a protected species of bird is discovered in the areas to be cleared, or in other habitats within 150 feet of construction boundaries, clearing and construction shall be postponed for at least two weeks or until the biologist has determined that the young have fledged (left the nest), the nest is vacated, and there is no evidence of second nesting attempts.

BR-6.2 *Precautions during Restoration of Bird Island.* The City shall adhere to the following requirements during the restoration of Bird Island.

- a. Ground-nesting bird species (various wading birds, gulls, and ducks) could potentially nest on Bird Island. All Bird Island restoration activities, including the placement of riprap and fill material, shall occur outside of the bird nesting season (February 1 through August 31).
- b. If Bird Island restoration activities, including the placement of riprap and fill material, cannot be avoided during the bird nesting season (February 1 through August 31), then nesting bird surveys (BR-6.1) shall be completed by a qualified biologist (See Mitigation Measure BR-4.1 for detailed mitigation measures for nesting birds).
- c. Implement Mitigation Measure BR-3.1.

BR-7 *Construction of the Preferred Project has the potential to impact overwintering Monarch butterflies. (PS)*

According to the Peer Review of Biological Resources (2012), a large number of overwintering Monarch butterflies (*Danaus plexippus*) were observed in the willow and eucalyptus trees along the railroad berm on the east side of the Park (refer to Figure 3-2, Aerial Photograph, for location of the railroad berm). Although Monarch butterflies are not a special-status species, they may be protected under regulations adopted by local jurisdictions that prohibit the removal of trees (native or non-native) known to support overwintering populations of Monarch butterflies. Removal of non-native eucalyptus trees supporting overwintering Monarch butterflies would be a ***potentially significant*** impact.

MITIGATION MEASURE. The following measure would reduce the potentially significant impacts on overwintering Monarch butterflies at the project site to ***less than significant***.

BR-7.1 *Identify and Protect Trees supporting overwintering Monarch butterflies at the project site.* The City shall implement the following measures to reduce impacts to overwintering Monarch butterflies.

- a. Avoid removal of any trees (native or non-native) known to support overwintering Monarch butterflies.
- b. If eucalyptus trees known to support overwintering Monarch butterflies are to be removed, removal shall occur when Monarch butterflies are not present (typically late March through late August).
- c. If possible, any eucalyptus trees removed known to support overwintering Monarch butterflies shall be replaced with relatively large, evergreen native species such as California bay or Monterey pine.

BR-8 *Conflicts with any Local Policies or Ordinances Protecting Biological Resources. The Preferred Project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. (LTS)*

As identified in Applicable Plans and Regulations, above, Policy EM-28 of the City's General Plan Environmental Management Element calls for natural habitat restoration and water quality improvement in the Aquatic Park lagoons. The Preferred Project is subject to City of Berkeley Municipal Code Chapter 11.56, which establishes regulations for the protection of open space, views, wetlands, tidal mudflats, seasonal ponds, wetland-type environment creeks, meadows, beaches and the low-density character of the unique waterfront area of the City. The Preferred Project would also be subject to the City's Municipal Code Chapter 12.44 establishing protection of trees and shrubs and the Live Oak Tree Ordinance. As described above, implementation of the Preferred Project would enhance natural habitat at the project site through wetland restoration, invasive species removal, and water quality improvements. Refer to Section 4.3, Hydrology and Water Quality, of this Draft EIR for further information regarding the Preferred Project's effects on water quality in the Aquatic Park lagoons. Further, before removal of any trees or shrubs at the project site, whether as part of restoration efforts or storm drain and tidal circulation infrastructure modification, the procedures required by Section 12.44 of the Municipal Code and the Live Oak Tree Ordinance would be followed. Adherence to the requirements contained within these two ordinances would reduce the potential for adverse impacts to trees and shrubs. As such, the Preferred Project would be consistent with all applicable local policies and ordinances for the protection of biological resources, resulting in a *less-than-significant* impact.

Cumulative Evaluation

The geographic context for evaluation of cumulative biological resource impacts is the area immediately upgradient of the project site in West Berkeley. As such, the cumulative project considered in this Draft EIR is the full buildout of the West Berkeley Project, which encompasses the project vicinity, east of the project site. The Initial Study conducted for the West Berkeley Project

determined that adherence to all applicable requirements associated with the protection of water quality in stormwater runoff would reduce potential impacts to riparian habitat at Aquatic Park to a less-than-significant level. Refer to Section 4.3, Hydrology and Water Quality, for further information regarding cumulative water quality impacts and applicable requirements. However, the Supplemental EIR to the West Berkeley Project identified the potential for significant impacts related to bird collisions. Many of the tall buildings that could be developed under the West Berkeley Project are adjacent to the Aquatic Park shoreline and, therefore, could obstruct the flight patterns of birds utilizing Aquatic Park. The Preferred Project would not contribute to this impact because it does not include development of any structures. As described in the Environmental Analysis, above, the Preferred Project is expected to result in long-term benefits to terrestrial and aquatic habitat, wetlands, and sensitive natural communities, and would not adversely affect special-status or listed species. Both the Preferred Project and the West Berkeley Project would be required to adhere to all applicable ordinances established for the protection of trees and shrubs. Therefore, the Preferred Project would not make a considerable contribution to cumulative biological resource impacts, and cumulative impacts would be less than significant.

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4.3 HYDROLOGY AND WATER QUALITY

Introduction

This section analyzes the anticipated effects on hydrology and water quality from implementation of the Preferred Project. It describes the existing hydrologic and water quality setting of the project site, identifies potential impacts on hydrology and water quality conditions, and prescribes recommended mitigation measures to offset any significant impacts that are identified. The assessment is based, in part, on prior modeling and analysis initiated as part of the 2003 Natural Resource Management Study (NRMS),¹ and expanded for the 2008 Aquatic Park Improvement Program (APIP).² The NRMS and APIP technical studies are available from the City of Berkeley and online.³

These efforts were supplemented by additional work conducted by Balance Hydrologics, Inc. (Balance) in 2009/10 for the present study. Results of the modeling and analysis completed by Balance to assess potential flooding impacts in the storm drain networks upstream from Aquatic Park for existing and Preferred Project conditions are presented in this section.

Environmental Setting

Physical Setting

Lagoons

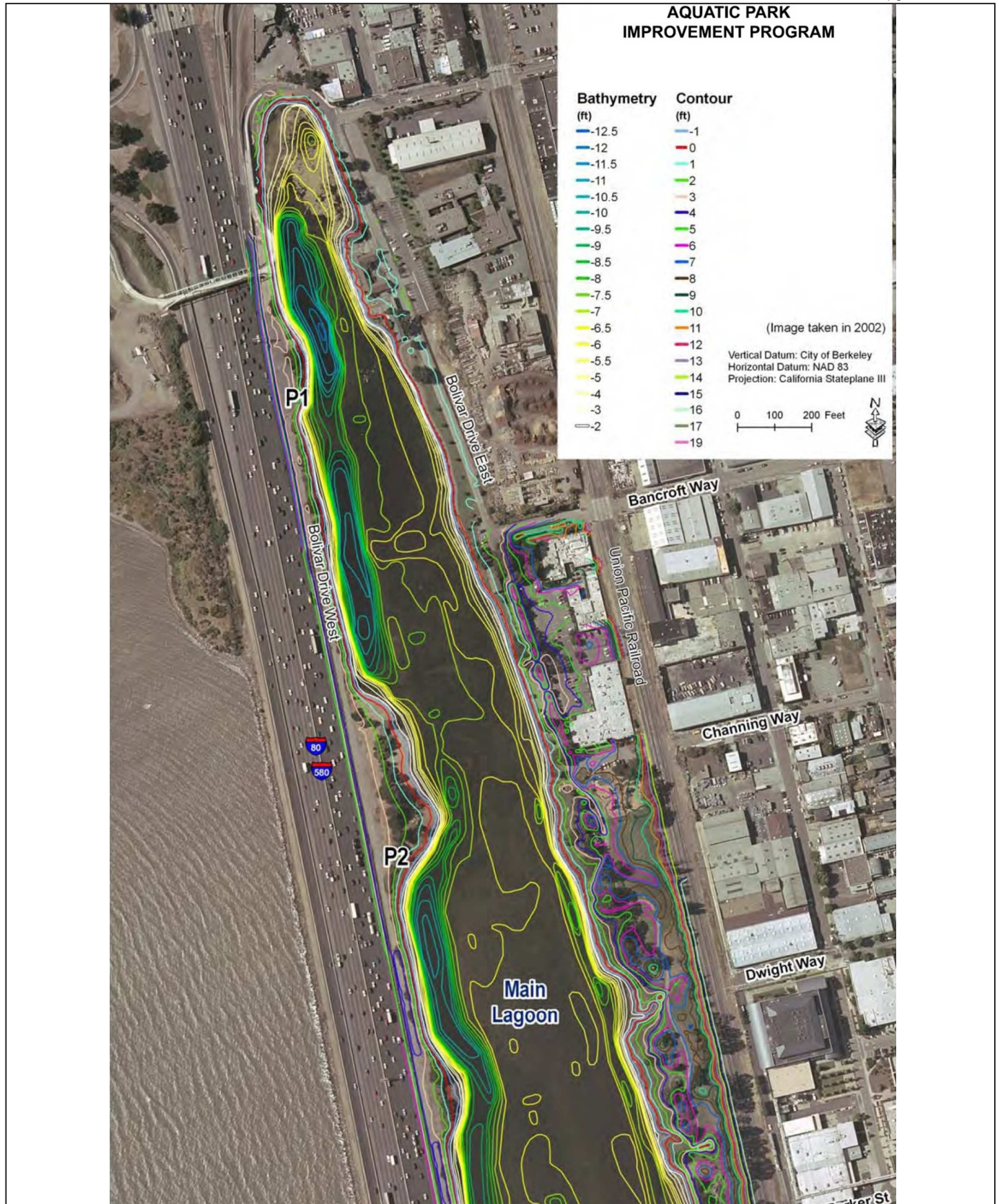
Aquatic Park comprises 102 acres along the eastern shore of San Francisco Bay, situated between the western edge of the City of Berkeley and Interstate 80 (I-80) (Figure 3-2, Project Description). Three manmade lagoons—the Main Lagoon, Model Yacht Basin, and Radio Tower Pond—cover about 68 acres of the park. The park also includes 0.7 acre of brackish/salt water wetlands and 1.1 acres of freshwater wetlands, as well as 11 acres of lawns, 7 acres of roads and trails, and 15 acres of uplands and buildings.

The three lagoons vary greatly in size and depth (see Figures 4.3-1a and 4.3-1b). The Main Lagoon covers 58.3 acres, most of which is approximately 5 feet deep, with a deeper trench along the western side. The Model Yacht Basin to the south is smaller (5.0 acres), and most of the lagoon is less than 5 feet deep. The Radio Tower Pond at the south end of the park is both the smallest (4.7 acres) and

¹ Laurel Marcus & Associates et al. *Aquatic Park Natural Management Study (NRMS)*. Prepared by Laurel Marcus & Associates, Hydrologic Systems, Inc., Hydroikos Associates, and Vallier Design Associates. City of Berkeley, Berkeley, California, 2003.

² Laurel Marcus & Associates et al. *Aquatic Park Improvement Program (APIP)*. Prepared by Laurel Marcus & Associates and Hydrologic Systems, Inc., City of Berkeley, Berkeley, California, 2008.

³ The Natural Resource Management Study (NRMS) and the Aquatic Park Improvement Program (APIP) Technical Report are available for review Monday through Friday between the hours of 8:30 am and 4:00 p.m. at the City of Berkeley, Parks Recreation and Waterfront Administration Office, 2180 Milvia Street, 3rd Floor, and the City of Berkeley, Recreation Offices, 1947 Center Street, 1st Floor. The documents are also available online by clicking the APIP link on the City's Parks Recreation and Waterfront website: <http://www.ci.berkeley.ca.us/parks>.



Source: APIP Figure 7a, March 2008.

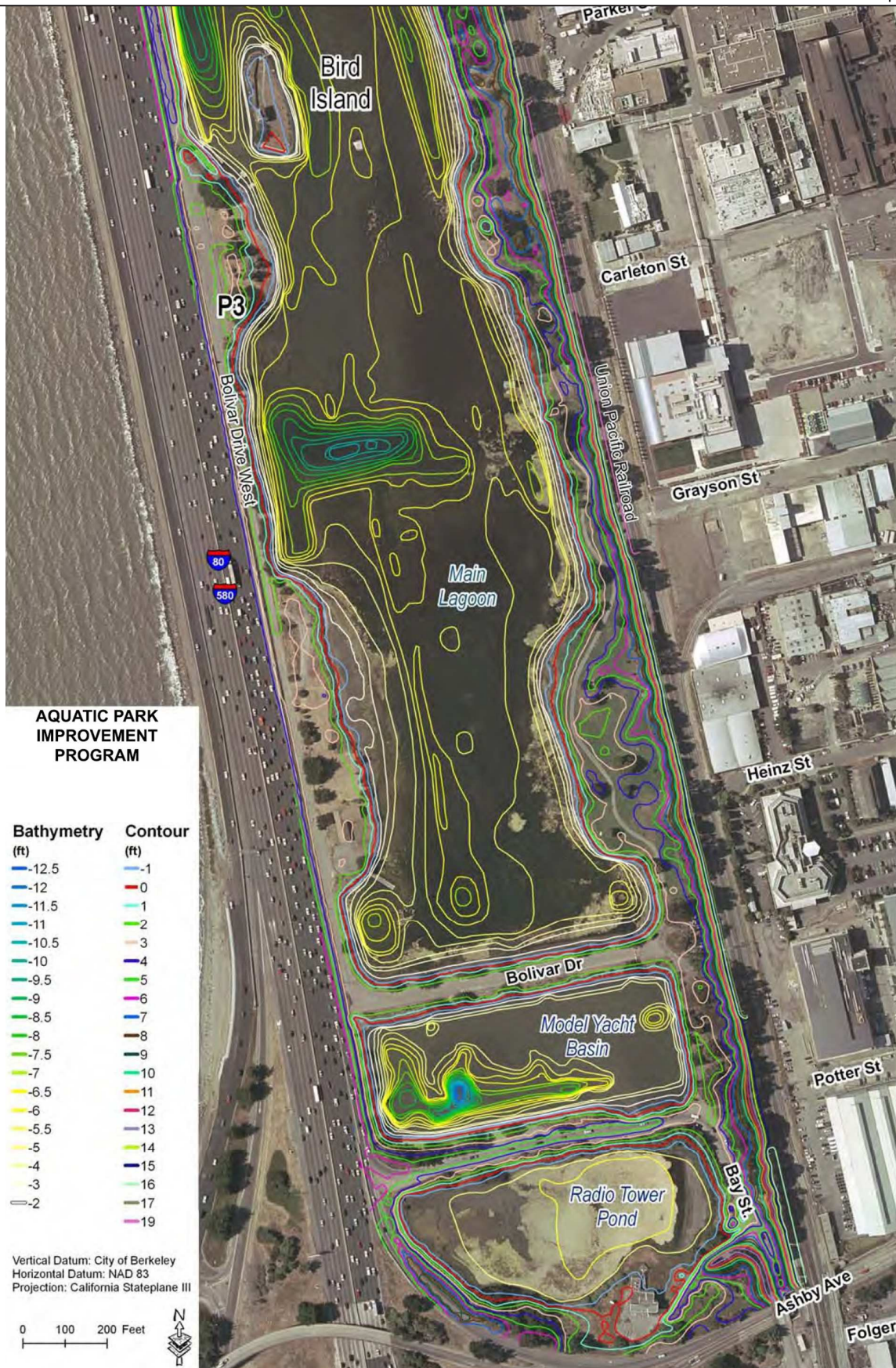


FIGURE 4.3-1b
Depth of Aquatic Park Lagoons (Southern Project Site)

Source: APIP Figure 7b, March 2008.

shallowest (mostly less than 2 feet deep) lagoon. Lagoon storage volumes reflect these physical parameters. The Main Lagoon holds about 220 acre-feet of water at high tide, as compared to approximately 20 acre-feet in the Model Yacht Basin, and about 15 acre-feet in the Radio Tower Pond. The lagoons are mostly shallow, subtidal aquatic habitat with a sandy/muddy bottom, similar to adjacent portions of central San Francisco Bay. As described in more detail in Section 4.2, Biological Resources, the extent of the intertidal zone and associated wetlands habitats in all three lagoons is limited by the steep sideslopes, and further constrained in the Main Lagoon by the rocky shoreline, and in the Model Yacht Basin by rock terraces lining a portion of the banks. The 0.76 acre of saltwater/brackish wetlands and mudflats occurs in isolated pockets along the margins of the lagoons, with the largest of these located at the western edge of the Radio Tower Pond (Figure 4.3-2).

Six freshwater wetlands totaling about 1.1 acres occur along the east side of the park (Figure 4.3-3). Five mostly linear wetlands border paths and active recreation areas near the Main Lagoon. These wetlands drain into the lagoon either through overland flow or via narrow, shallow channels, some of which discharge through culverts. The southernmost wetland is a seep in the northeast corner of the Radio Tower Pond.

Linkages to Infrastructure (Connectivity to Upstream Watersheds and the Bay)

Hydrologic conditions within the lagoons are strongly influenced by tidal hydrology, as the lagoons are directly and indirectly connected to central San Francisco Bay (see Table 4.3-1). Storm runoff and surface water inflows from a 4,380-acre (6.8-square-mile) watershed, which includes a sizeable portion of the City of Berkeley (Figure 4.3-4), are a strong influence, particularly during the rainfall season.

Watersheds. Two similar-sized subwatersheds, each roughly 2,000 acres in size, comprise most of the contributing area above the park (see Figure 4.3-4). The northern subwatershed drains to the Strawberry storm drain network (Strawberry line), paralleling University Avenue. The southern subwatershed drains to the Potter Street storm drain network (Potter line). The remainder of the watershed consists of areas immediately east of the park that drain directly to the park through local storm.

Although undeveloped Strawberry Canyon occupies the upper watershed of the Strawberry line, the drainage as a whole is predominately urbanized, with an estimated impervious area coverage of approximately 40 percent.⁴ Flows from the Strawberry watershed primarily flow through the City in a subsurface storm drain network. Under typical conditions, the 90-inch-diameter Strawberry line discharges into the Bay from an outfall on the south bank of Cesar Chavez Park. An overflow pipe at the lower end of the line connects with the north end of the Main Lagoon, but a weir in the pipe is set at an elevation sufficiently high to prevent tidal inflows and most stormwater runoff from entering the lagoon. However, at high flows and during higher tides, stormwater in the Strawberry line overtops the weir and discharges into the Main Lagoon.

⁴ UC Berkeley Office of Environmental Health and Safety, Strawberry Creek Management Plan, Draft UC Berkeley EH&S working document, 2005, by e-mail from Karl Hans, EH&S, page 5-13.

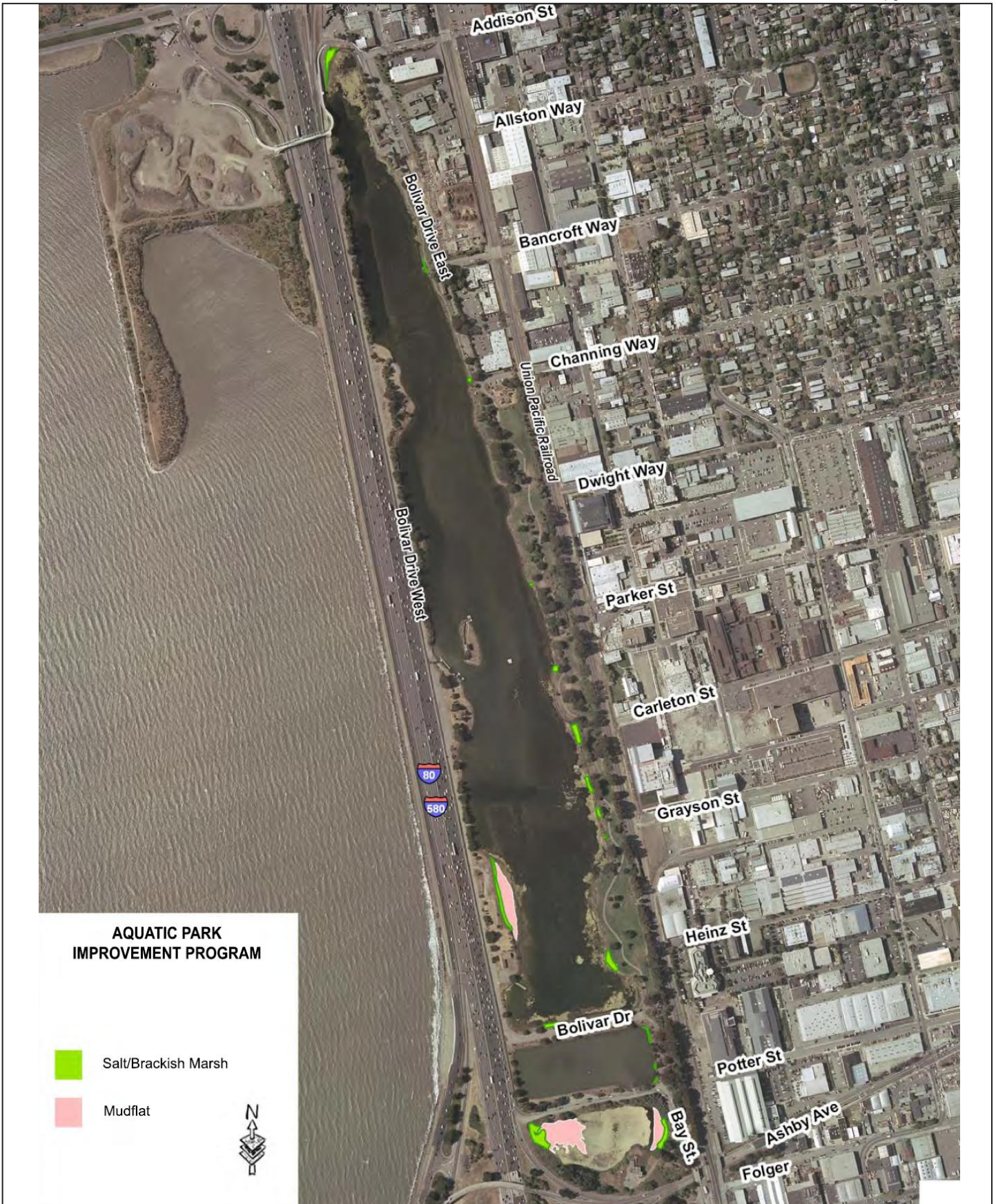
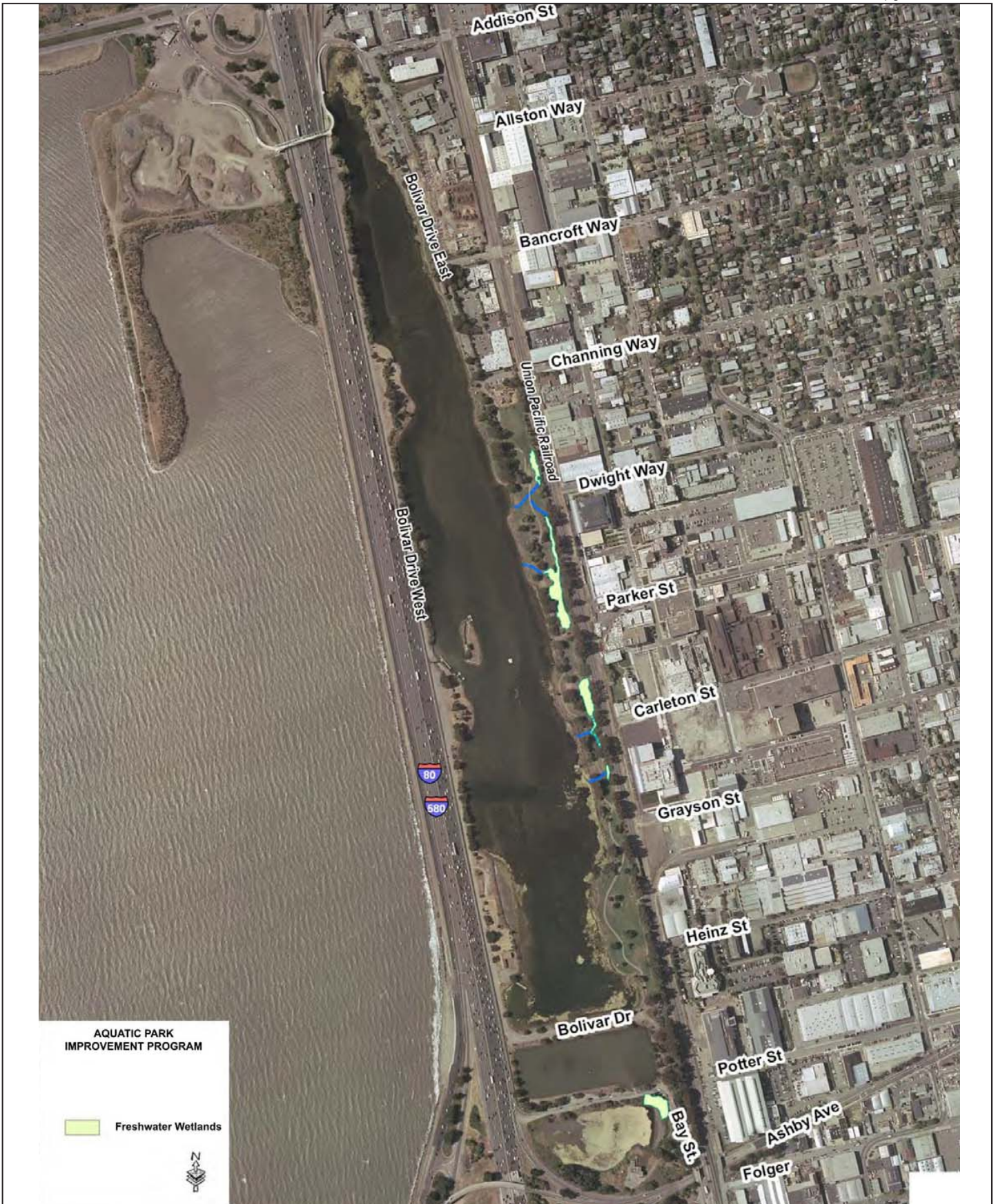


FIGURE 4.3-2
Salt/Brackish Wetlands of Aquatic Park

Source: APIP Figure 43, March 2008.



AQUATIC PARK
IMPROVEMENT PROGRAM

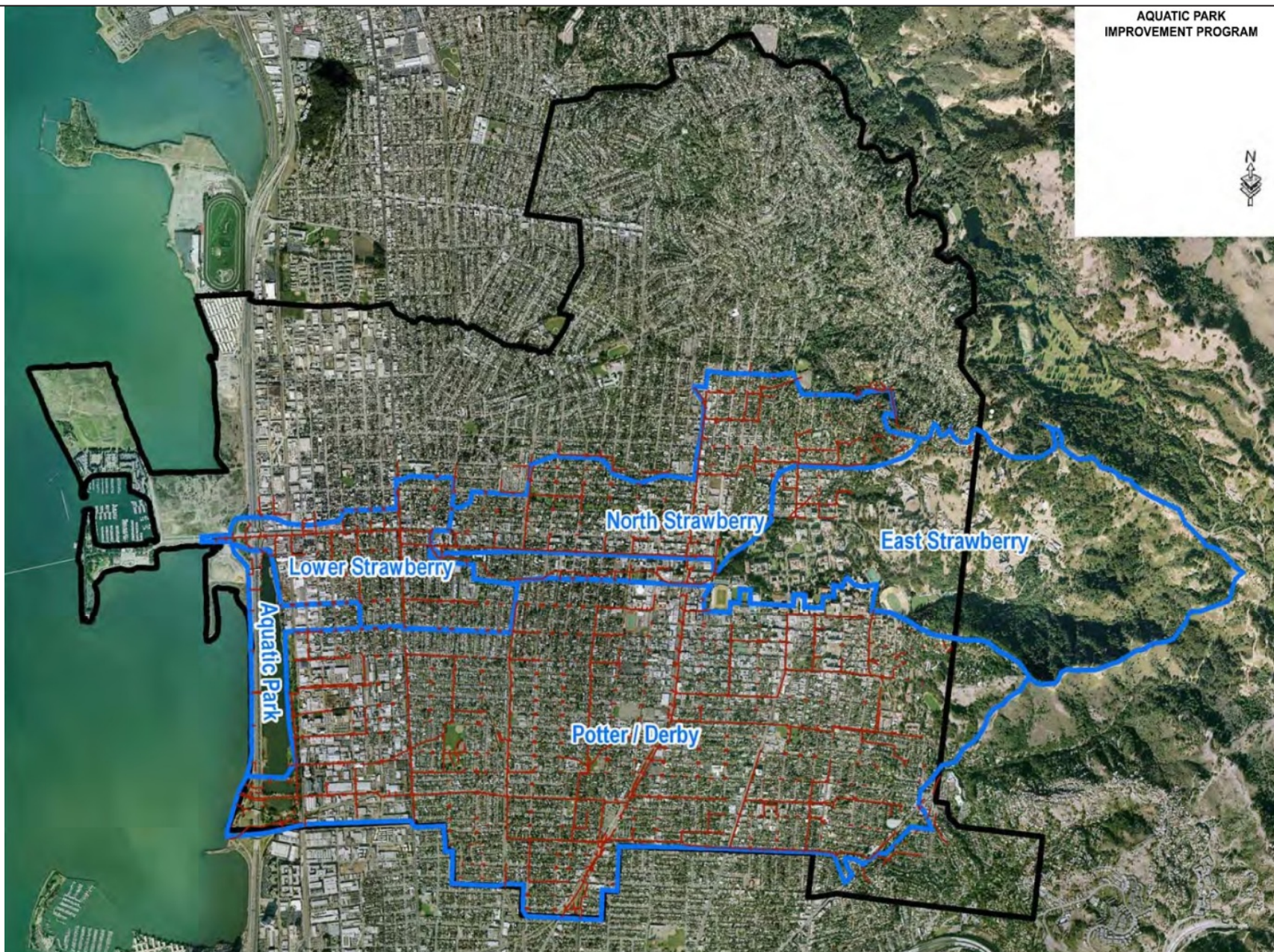


Table 4.3-1
Summary of Lagoon Connections

| Description | Size | Condition |
|---|------------------------------|---|
| Strawberry Line | One 90-inch concrete pipe | Condition OK. |
| Connection Between Strawberry Storm Drain (Strawberry Line) and Main Lagoon | One 90-inch concrete pipe | Condition OK. Outlet in lagoon partially buried. |
| Tide tube between northern Main Lagoon and San Francisco Bay | One 24-inch concrete pipe | Gate valve in lagoon functional; outlet on Bay side not found. |
| Tide tubes between central Main Lagoon and San Francisco Bay | Five 24-inch concrete pipes | Gates in lagoon are functional; outlets on Bay side are in poor condition; flow is restricted, require cleaning; several tubes blocked. |
| Connection Between Model Yacht Basin and Main Lagoon | Two 24-inch concrete pipes | Requires removal of marine growth; currently near zero flow. |
| Tide tube between Model Yacht Basin and San Francisco Bay | One 24-inch concrete pipe | Inlet in lagoon functional; outlet on Bay side often buried in sand. |
| Connection Between Potter Line and Model Yacht Basin | Two 24-inch concrete pipes | Condition OK, needs cleaning. |
| Potter Street Storm Drain (Potter Line) | One 7 x 9-foot concrete pipe | Condition OK. |
| Connection between the Radio Tower Pond and San Francisco Bay | One 24-inch concrete pipe | The tide tube has partially collapsed below the I-80 roadbed. Complete blockage may occur. |

Source: Aquatic Park Implementation Program Technical Report, 2008. Table 2.

The Potter and Derby watersheds draining to the Potter line are entirely urbanized, and both drainages are almost completely enclosed in storm drains. The Potter line discharges into the Bay at the terminus of Potter Street through a 7-foot by 9-foot culvert. Where the line passes between the two lagoons, two 24-inch pipes set several feet above the bottom connect the storm drain with the Model Yacht Basin. In contrast to the Strawberry line, no weir impedes flows between the Potter line and the Model Yacht Basin. Both tidal inflows and surface water runoff enter the Model Yacht Basin via the Potter line to varying degrees depending upon water levels in the Bay and the lagoons, and the magnitude of the storm event.

During most storm events, a portion of the Aquatic Park watershed directly discharges to the park. Surface runoff from adjacent minor roads and parking lots, portions of I-80, and lower Dwight Way and Channing Way enters the park through overland flows (Figure 4.3-5). A local storm drain network serves lower Channing, Dwight, Parker, Carleton, Grayson, and Heinz streets. The Channing and Dwight streets' storm drains discharge directly into the Main Lagoon. The other four storm drains have flow separators designed to route runoff from small storms into the Main Lagoon, and to route runoff from larger events or periods of high flow southward through the transite pipe to the Potter line for discharge into the Bay and the Model Yacht Basin. However, these flow separators are now largely inoperable and the associated trash collectors and oil/water separators are often blocked by debris, such that storm runoff routing between the Main Lagoon and the Potter line is unpredictable. Further, during high tides, water backing-up in the Potter line can block those flows, which are directed through



FIGURE 4.3-5
Aquatic Park Storm Drain Pipe Network

Source: APIP Figure 60, March 2008.

the transite pipe causing runoff from these local storm drains to discharge directly into the Main Lagoon.

Bay Connections. A total of eight culverts or “tide tubes” under I-80 connect the lagoons with the central Bay (see Figure 3-2, Project Description). Six tide tubes serve the Main Lagoon, while the Model Yacht Basin and the Radio Tower Pond are each served by one tide tube. As documented in the APIP, the tide tubes are typically only 24 inches in diameter, and some are set at relatively high elevations. In addition to these design constraints, the tide tubes are in generally poor condition (refer to Table 4.3-1, above). The tide tube at the north end of the Main Lagoon is non-functional. The five tide tubes clustered near the mid-point of the Main Lagoon are partly blocked and their outlets have deteriorated. The outlet for the Model Yacht Basin tide tube is often buried in sand. The portion of the Radio Tower Pond tide tube beneath the frontage road has collapsed and needs to be repaired.

Interconnections. Two widely separated 24-inch pipes under Bolivar Drive connect the Main Lagoon with the Model Yacht Basin. These connections allow inflows from the Bay to enter the Main Lagoon via the Potter line, improving circulation and water quality. However, these pipes are severely blocked.

Topography

Elevations of structures, topographic features, and water surfaces are typically expressed in relation to a particular datum. For example, navigational charts use Mean Lower Low Water (MLLW) to define 0.0 feet. Two of the most commonly referenced datums in the San Francisco Bay area are the National Geodetic Vertical Datum of 1929 (NGVD 1929) and the North American Vertical Datum 1988 (NAVD 88). The City of Berkeley has used a local datum (the Berkeley Datum) for many years. All elevations in this section are expressed in terms of the Berkeley Datum, consistent with the 2003 NRMP and 2008 APIP reports.

The Aquatic Park watershed extends eastward to the top of the Berkeley Hills, attaining an elevation of almost 1,750 feet, but the park itself is located in one of the lowest areas of Berkeley. Based on a topographic survey conducted in 2006, elevations in the park range from above 6.0 feet in the uplands to around 0.0 feet along the lagoon shoreline (Figures 4.3-1a and 4.3-1b, above). The existing system of tide tubes, culverts, and storm drain connections was designed to limit the maximum high-tide elevation in the lagoons to at least 1.0 foot below the level of the lowest adjacent structure or roadway. For the Main Lagoon, the lowest adjacent structure is the Old Sailing Center at an elevation of +0.5 feet. The road surface of Bolivar Drive, between the Model Yacht Basin and the Main Lagoon, is at an elevation of +2.0 feet. The Radio Transmitter Building within the Radio Tower Pond is at an elevation of -1.5 feet.

Invert elevations of the tide tubes range from -4.4 to -4.7 feet at the inlets to the Main Lagoon, to -6.2 feet at the outlet of the Radio Tower Pond (inlet elevation not available). The two pipes from the Potter line discharge to the Model Yacht Basin at about -4.2 feet, while the line discharges to the Bay at approximately -6.5 feet. The outlet for Strawberry line is even lower, at an elevation of -8.9 feet, while the top of the weir in the pipe connecting the Strawberry line to the Main Lagoon is at +1.52 feet.

Geology and Soils

West Berkeley is situated on a series of alluvial fan and fluvial deposits (Santa Clara Formation and Younger Alluvial Fans) atop westward-sloping basement rock (Figure 4.3-6). The alluvial units range from 10 to 300 feet in thickness and are interfingered with Alameda Formation deposits composed of Young Bay Mud and Yerba Buena Mud. The basement rock occurs about 400 to 500 feet below the ground surface.^{5,6}

Creation of the Aquatic Park lagoons began over 70 years ago when construction of the Eastshore Highway extension (now I-80) severed a portion of the historic Berkeley shoreline from the Bay. The newly isolated, sub-tidal and intertidal nearshore areas were excavated and the fill was used to expand the freeway. East of the lagoons, the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) has classified most of coastal Berkeley, including the upland portions of Aquatic Park, as Artificial Fill or Urban Land.⁷ The developed portion of the Aquatic Park watershed, from just east of the Bay margin to the crest of the hills, has also largely been mapped as Urban Land by the NRCS.⁸ These clayey and silty soils are moderately permeable, with infiltration rates of 0.6 to 2.0 inches per hour, providing for absorption and percolation of most rainfall from smaller storms. However, the soils are classified into Hydrologic Group D, with the highest potential for rapid runoff, due to slope, shallow depth, and high swelling potential, which leads to much slower infiltration rates once they are thoroughly wetted.

Groundwater

In general, Berkeley is characterized by a tectonic depression primarily filled with a series of alluvial fan and fluvial deposits, which are of water-bearing strata.⁹ Much of West Berkeley now contains artificial fill, which ranges from 1 to 50 feet thick, with the deepest deposits found near the bay.¹⁰ Boring logs from excavations along the northern (Bolivar Drive) and southern (Potter Street) boundaries of the Model Yacht Basin show that the Aquatic Park uplands are underlain by undocumented fill consisting of a mix of silty sands, sandy clay, and silts with interbedded layers of

⁵ Graymer, R.W., Geologic map and map database of the Oakland metropolitan area, Alameda, Contra Costa, and San Francisco Counties, California. U.S. Geological Survey, Miscellaneous Field Studies, MF 2342, online version 1.0, 2000.

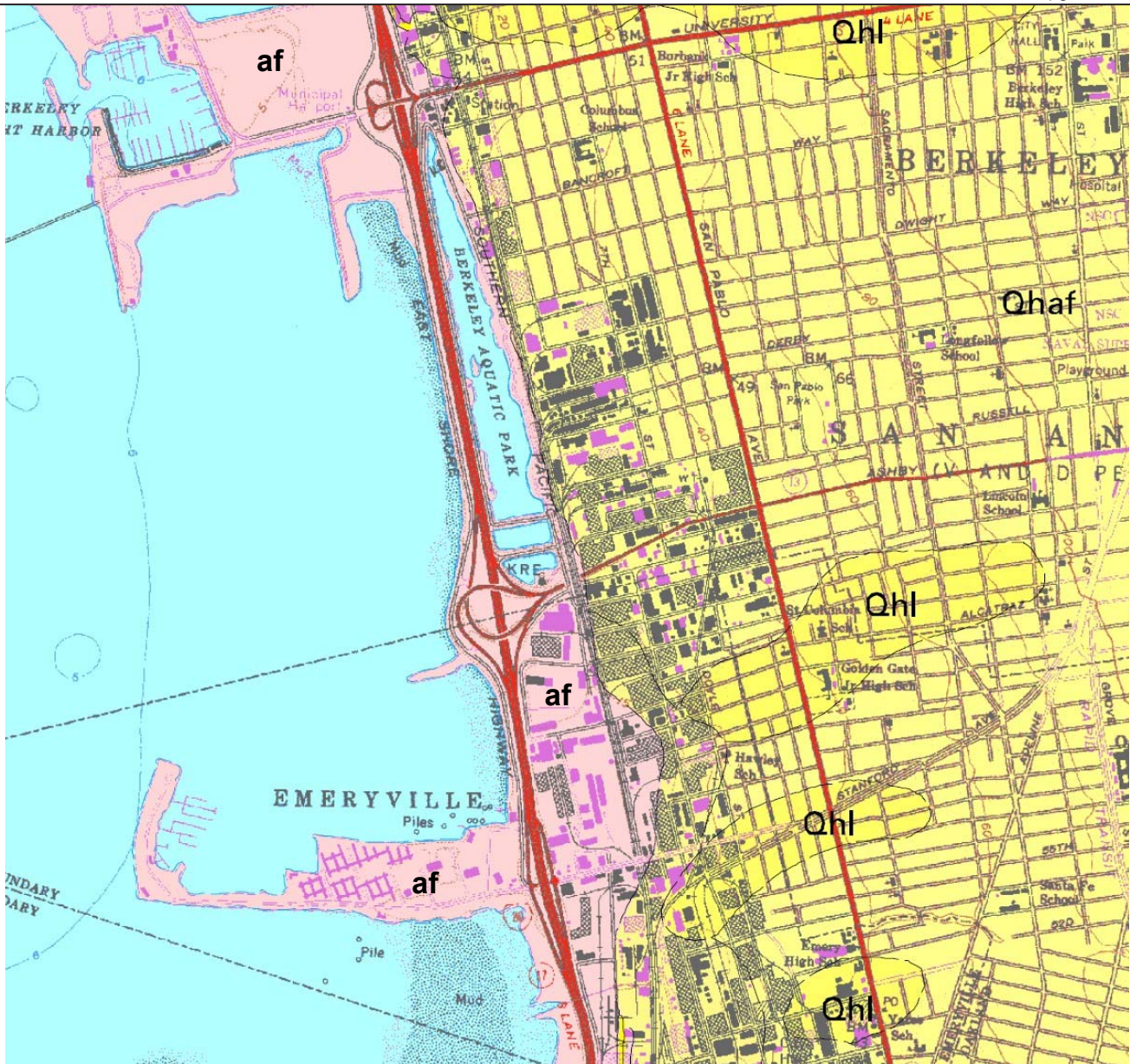
⁶ Norfleet Consultants, Groundwater study and water supply history of the East Bay Plain, Alameda and Contra Costa Counties, CA. Consulting report prepared for The Friends of the San Francisco Estuary. 125 pp, 1998.

⁷ Welch, L.E., *Soil survey of Alameda County, California, Western Part*, 103 p. + appendices and maps, 1981.

⁸ Welch, L.E., *Soil survey of Alameda County, California, Western Part*, 103 p. + appendices and maps, 1981.

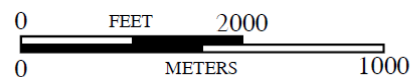
⁹ Aquatic Park is located in the San Francisco Bay Hydrologic Region. Norfleet Consultants, 1998, call this region the San Francisco Basin, of which, Aquatic Park is in the Berkeley sub-area. The Department of Water Resources, 2003, distinguishes Berkeley as a part of the Santa Clara Valley: East Bay Plain Subbasin.

¹⁰ California Department of Water Resources, California's Groundwater, Bulletin 118: San Francisco Bay, 7 pp, 2003.



EXPLANATION

- Qh1** ALLUVIAL FAN AND FLUVIAL DEPOSITS (HOLOCENE)
- Qh1f** NATURAL LEVEE DEPOSITS (HOLOCENE)
- af** ARTIFICIAL FILL



Scale approximate



ATKINS

**FIGURE 4.3-6
Geologic Map of West Berkeley**

Source: Graymer, 2000; Engco 2007; Balance Hydrologics, Inc., 2011.

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Berkeley Aquatic Park Improvement Program

clayey sand.¹¹ While no significant aquitard units, or beds of low permeability, have been reported within this area,¹² the generally discontinuous stratigraphy tends to slow the downward movement of water, and the mud deposits likely bound the major aquifers to some degree.

Historically, individual wells provided water for most homes in Berkeley. No historic municipal well fields or large-scale groundwater sources have been identified in the area, likely due to low groundwater yields.¹³ Groundwater is not currently a source of drinking water in the area, and the aquifer is not designated for beneficial use in the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan).¹⁴ Seawater intrusion was prevalent in the vicinity of present day Aquatic Park from 1890-1993.¹⁵ During this period, well depths averaged 60 to 80 feet with the water table between 20 to 25 feet below ground surface. The freshwater wetlands along the east side of the present-day lagoons are thought to be supported by groundwater seeps; this suggests that present-day groundwater elevations are generally coincidental with the ground surface at Aquatic Park. It is thought that the large elevation drop (10 to 12 feet) between the lands east of the Union Pacific Railroad tracks and the Main Lagoon intercepted the groundwater table.¹⁶ This is highly likely as leaking underground storage tank investigations indicate a shallow groundwater table in the area,¹⁷ with reported groundwater elevations of 1.8 feet near the railroad tracks at Parker and Fourth streets (about 350 feet east of the railroad tracks, near the center of the Main Lagoon), and 11.8 feet near Potter and Seventh streets (about 1,350 feet east of the railroad tracks, near the southern portion of Aquatic Park).

Climate and Hydrology

Rainfall and Evapotranspiration

Aquatic Park lies at the foot of the Berkeley hills on the margins of central San Francisco Bay. The park experiences a Mediterranean-type climate with cool, wet winters and warm, dry summers. Ninety-five percent of all rainfall arrives between the months of October and April. Winter storms that produce the greatest amount of precipitation originate from the northwest.

¹¹ ENGEO Incorporated, Geotechnical exploration, Aquatic Park Water Quality Improvement Project, Berkeley, California. A consulting report prepared for HSI Hydrologic systems, Inc., 41 pp, including tables and figures (see Appendix E of the 2008 APIP), 2007.

¹² Norfleet Consultants, Groundwater study and water supply history of the East Bay Plain, Alameda and Contra Costa Counties, CA. Consulting report prepared for The Friends of the San Francisco Estuary. 125 pp, 1998.

¹³ Norfleet Consultants, Groundwater study and water supply history of the East Bay Plain, Alameda and Contra Costa Counties, CA. Consulting report prepared for The Friends of the San Francisco Estuary. 125 pp, 1998.

¹⁴ Regional Water Quality Control Board, San Francisco Bay Region (Region 2), Water Quality Control Plan (Basin Plan), June 1995.

¹⁵ Norfleet Consultants, Groundwater study and water supply history of the East Bay Plain, Alameda and Contra Costa Counties, CA. Consulting report prepared for The Friends of the San Francisco Estuary. 125 pp, 1998.

¹⁶ Haltiner, J., Hydrology and water quality: Berkeley Aquatic Park, A consulting report prepared by Philip Williams & Associates, Ltd. 21 pp, 1990.

¹⁷ GEOTRACKER database, 2010, at <http://www.geotracker.swrcb.ca.gov/>

The closest source of long-term meteorological data is the National Climatic Data Center (NCDC) Berkeley weather station (station #040693), located approximately 2 miles east of the project site at an elevation of 310 feet above sea level. The Berkeley rainfall station has a 118-year period of record (1893 to 2010). On a water year basis (October-September), historic mean annual rainfall is 23.4 inches, slightly higher than the 21 inches at the project site as read from the Alameda County isohyetal map.¹⁸ Table 4.3-2 summarizes the mean monthly rainfall and evapotranspiration collected at the NCDC Berkeley weather station. The historical rainfall record is characterized by periods of abundant rainfall and prolonged drought. Recently, water years 1995, 1998 (historical maximum of 45.9 inches), and 2006 were very wet. The highest daily rainfall total occurred in January 1982, with 6.98 inches of rain. The highest monthly rainfall total was 14.49 inches in February 1998.

Table 4.3-2
Mean Monthly Rainfall and Evapotranspirative Demand

| Month | Mean Monthly Precipitation¹ (inches) | Mean Monthly Reference (ET_o) Evaporation² (inches) | Water Surplus Or Deficit (inches) | Potential Runoff or Recharge³ (inches) |
|---------------------|--|---|--|--|
| October | 1.26 | 2.48 | -1.22 | -- |
| November | 2.79 | 1.20 | 1.59 | 1.6 |
| December | 4.15 | 0.62 | 3.53 | 3.5 |
| January | 4.99 | 0.93 | 4.06 | 4.1 |
| February | 4.10 | 1.40 | 2.70 | 2.7 |
| March | 3.21 | 2.48 | 0.73 | 0.7 |
| April | 1.63 | 3.30 | -1.67 | -- |
| May | 0.76 | 4.03 | -3.27 | -- |
| June | 0.19 | 4.50 | -4.31 | -- |
| July | 0.03 | 4.65 | -4.62 | -- |
| August | 0.06 | 4.03 | -3.97 | -- |
| September | 0.26 | 3.30 | -3.04 | -- |
| Annual Total | 23.4 | 32.9 | -- | 12.6 |

Source: Balance Hydrologics Inc., 2012.

Notes: Water Year Basis: October-September.

1. Mean monthly precipitation based on historical data (1893 and 2010) from the Western Regional Climate Center (WRCC, 2011) for NCDC Station No. 040693 in Berkeley, CA located at 37°52'00" N and 122°16'00" W at about elevation 310 feet above sea level.
2. Mean monthly reference evapotranspiration (ET_o) is defined as the evapotranspiration of a broad expanse of well watered 4- to 6-inch-tall cool-season grass. Monthly ET_o values are based on data from Zone 1 (Jones, 1999).
3. Recharge of dry soils early in the wet season must satisfy the soil moisture deficit before percolating rainfall reaches the water table.

¹⁸ LaBelle, D.J., and Kavar, O.H. Hydrology and Hydraulics Criteria Summary for Western Alameda County, Alameda County Public Works Agency, 1989.

The calculated 2-year recurrence interval, 24-hour storm event is estimated at 2.64 inches of rainfall. The 10-year recurrence interval, 24-hour storm event is estimated at 3.86 inches of rainfall. The calculated 100-year recurrence interval, 24-hour storm event is estimated at 5.79 inches of rainfall.¹⁹

Average annual evapotranspiration²⁰ for the Berkeley area is estimated at about 33 inches. Of this total, only about one-fifth (6.6 inches) occurs between November and March, when precipitation exceeds evaporation and most runoff or recharge occurs.

Surface Runoff/Flows

Summary of APIP Modeling Results. The APIP consultant team developed a hydrologic model of the Aquatic Park watershed to simulate rainfall-runoff processes and generate runoff hydrographs for storms of different recurrence intervals. These hydrographs were then used as the input to a hydraulic model to estimate the volume of runoff flowing into the lagoons from design storms.

The hydrologic modeling was completed using the US Army Corps of Engineers' HEC-HMS software platform. Within the 6.8-square-mile watershed draining to Aquatic Park, 24 separate subwatersheds were delineated. Hourly precipitation data from Alameda County was used to produce balanced hyetographs for a suite of design storms. Soil type, texture, and hydrologic characteristics were summarized based on mapping and analyses completed by the NRCS.²¹ The SCS (Soil Conservation Service [SCS], now NRCS) Curve Number methodology was then used to simulate infiltration losses from the drainage areas.

The APIP presented runoff hydrographs for the 5-, 10-, 25-, and 100-year, 24-hour precipitation events.²² In each case, peak flows and volumes of runoff were highest for the Potter line. For example, the modeled 5-year, 24-hour peak flow produced a peak flow of almost 1,400 cubic feet per second (cfs) and a total runoff volume of about 500 acre-feet in the Potter subwatershed. The same storm in the Strawberry subwatershed produced a peak flow of almost 900 cfs and a total outflow of about 400 acre-feet. By comparison, the Radio Tower Pond subwatershed produced a peak flow of about 20 cfs and about 5 acre-feet of runoff. Peak flows for the six small watersheds due east of the Main Lagoon ranged from about 15 to 40 cfs, with total outflows ranging from 5 to 13 acre-feet.

Peak flow for the 100-year recurrence interval, 24-hour storm, typically considered to be the worst-case event, was over 1,650 cfs for the Strawberry subwatershed (approximately 770 acre-feet of runoff) and over 2,450 cfs for the Potter subwatershed (over 900 acre-feet of runoff). Peak flow for the same event in the Radio Tower Pond watershed was proportionately lower: about 43 cfs and 12 acre-

¹⁹ Laurel Marcus & Associates et al. *Aquatic Park Improvement Program (APIP)*. Prepared by Laurel Marcus & Associates and Hydrologic Systems, Inc., City of Berkeley, Berkeley, California, 2008.

²⁰ Evapotranspiration is the combined process of transferring moisture from the earth to the atmosphere by transpiration from plants and evaporation of water.

²¹ Welch, L.E., *Soil survey of Alameda County, California, Western Part*, 103 p. + appendices and maps, 1981.

²² Laurel Marcus & Associates et al. *Aquatic Park Improvement Program (APIP)*. Prepared by Laurel Marcus & Associates and Hydrologic Systems, Inc., City of Berkeley, Berkeley, California, 2008, Table 16.

feet of runoff. Peak flows in the six eastside subwatersheds ranged from about 25 to 170 cfs, with total outflows ranging from about 9 to 23 acre-feet.

Differences between the APIP and the City of Berkeley Watershed Management Plan (WMP) Modeling. Hydraulic and hydrologic modeling²³ of portions of the City was recently completed as part of the WMP, including much of the Aquatic Park drainage system. The WMP included a detailed hydrologic and hydraulic model of the entire Potter watershed, but did not include the Strawberry watershed or the sub-watersheds that discharge directly into the Main Lagoon. When compared to the modeling results generated for the APIP, modeled trends of flooding and exchange rates between the storm drains and basins are generally consistent. However, because the APIP modeling included all the watersheds contributing runoff to the Aquatic Park lagoons and, as extended, the main Strawberry and Potter system storm drain lines up to San Pablo Avenue, the modeling prepared specifically for the APIP is the most appropriate basis for assessing impacts from the proposed project. Descriptions of modeling results contained in this document are limited to those prepared specifically for use in assessing potential impacts resulting from the APIP. For reasons of consistency and clarity, specific modeling results from the WMP are not referenced.

Tidal Hydrology

Tides

The Aquatic Park lagoons receive tidal inflows from the central Bay through the tide tubes and, in the case of the Main Lagoon and the Model Yacht Basin, the Potter line as well. Tidal waters rise and fall twice daily on a roughly 25-hour cycle, with one high tide higher than the other and one low tide lower. Table 4.3-3 below compares elevations of various tide levels based on the navigational datum (where MLLW is defined as 0.0 feet) with those of the Berkeley and NAVD 1988 datums.

Water Levels in Lagoons

Measurements. The magnitude and pattern of water levels in the Aquatic Park lagoons are controlled by the size and elevation of the tide tubes, culverts, and storm drain connections. The maximum allowable high-tide elevation in the lagoons is limited by the presence of buildings and roads on the lagoon shoreline. However, the current deteriorated condition of these infrastructure components causes water levels in the Main Lagoon to lag even further behind the tide level in the Bay, resulting in an extremely muted tidal range and only a limited amount of tidal flushing.

²³ Hydrologic modeling simulates the conversion of rainfall to surface runoff for design storms of different magnitudes, providing peak flow rates at different points in the watershed. Hydraulic modeling then routes those runoff flows through the storm drain and open channel system to determine water surface elevations and overflow rates from the system.

Table 4.3-3
Tidal Stage Elevations at Different Datums

| | <u>Mean Lower Low Water (MLLW)</u> | <u>NAVD 88</u> | <u>Berkeley Datum</u> |
|------------------------|------------------------------------|----------------|-----------------------|
| | (feet) | | |
| Mean Higher High Water | 6.17 | 6.02 | 0.14 |
| Mean High Water | 5.58 | 5.43 | -0.45 |
| Mean Tide Level | 3.35 | 3.20 | -2.68 |
| Mean Low Water | 1.13 | 0.98 | -4.9 |
| Mean Lower Low Water | 0.00 | -0.15 | -6.03 |

Source: APIP, 2008.

Note:

1. The Berkeley datum is roughly similar to 0.0 feet at mean higher high water. To convert from the Berkeley datum to NGVD 1929 datum (with zero being approximately at mean sea level), add 3.17 feet. To convert from the Berkeley datum to NAVD 88 datum add 5.89 feet. (<http://www.ci.berkeley.ca.us/>)
2. NAVD88 = 2.713 ft above NGVD 1929

Water levels in the lagoons were monitored for the APIP from January to March 2007 (see Table 4.3-4). During this period of extreme high and low tides, the maximum water level in the Main Lagoon was -1.86 feet, over 2 feet below the elevation of the lowest adjacent structure, the Old Sailing Center (+0.5 feet). The maximum water level in the Model Yacht Basin was similarly more than 2 feet lower than the surface of Bolivar Drive. However, the maximum water level in the Radio Tower Pond was -2.01 feet, only about 6 inches below the elevation of the Radio Transmitter Building (-1.5 feet).

Table 4.3-4
Results of Lagoon Monitoring Program, January – March 2007

| | <u>Minimum Monitored</u> | <u>Maximum Monitored</u> | <u>Maximum Tidal Range</u> | <u>Average Tidal Range</u> | <u>Mean Tidal Level</u> |
|-------------------|--------------------------|--------------------------|----------------------------|----------------------------|-------------------------|
| | (feet) | | | | |
| Main Lagoon | -2.88 | -1.86 | 1.02 | 0.21 | -2.39 |
| Model Yacht Basin | -3.12 | -0.07 | 3.05 | 1.77 | -2.16 |
| Radio Tower Pond | -3.75 | -2.01 | 1.74 | 0.36 | -2.62 |
| San Francisco Bay | -7.30 | 0.81 | 8.11 | 6.16 | -2.73 |

Source: Table 3 of APIP, 2008.

Note:

All elevations are in terms of the Berkeley datum.

The maximum tidal range during the monitoring period was observed in the Model Yacht Basin (3.05 feet), followed by the Radio Tower Pond (1.74 feet) and the Main Lagoon (1.02 feet). Average tidal ranges in all three lagoons were even more muted. For comparison, the maximum tidal range in the adjacent Bay during this period was 8.11 feet, and the average tidal range was 6.16 feet.

Modeling Results. The APIP used the U.S. Environmental Protection Agency (EPA) Stormwater Management Model (SWMM) to evaluate the network of tide tubes, culverts, and pipes connecting the

lagoons with the Bay and assess tidal fluctuations in the lagoon. The hydraulic model was run for a one-month period covering the January to February 2007 water-level monitoring study and calibrated to match the study data through adjustments to the entrance and exit losses, pipe roughness and effective pipe, thereby adjusting for barnacle encrustations and other blockages.

When the model was run for existing conditions, high water levels in the Main Lagoon and the Model Yacht Basin were slightly lower than the maximums recorded during actual monitoring, and low water levels were slightly higher than the minimums.²⁴ As a result, the modeled tidal range for the Main Lagoon was 0.50 feet, and for the Model Yacht Basin was 2.26 feet, values intermediate between the average and maximum tidal ranges calculated based on the monitoring data. No existing conditions modeling results for the Radio Tower Pond were presented in the APIP.

Exchange Rates

Modeling Results. The APIP circulation model (SWMM) confirmed that tidal circulation within the Main Lagoon and the Model Yacht Basin are currently limited. Inflow and outflow to the Main Lagoon and Model Yacht Basin during a mean daily tidal cycle was approximately 22.2 acre-feet.²⁵ More than one-half of the inflows (12.1 acre-feet) from the Bay entered the two lagoons through the Potter line, with the remainder entering through the tide tubes. On the outflow, 12.8 acre-feet of lagoon water was conveyed to the Bay through the tide tubes, with 9.4 acre-feet discharged through the Potter Street outfall. Because the Main Lagoon holds about 220 acre-feet of water at high tide, and the Model Yacht Basin about 20 acre-feet, this volume of tidal exchange is equivalent to a residence time of more than 11 days.

The APIP also modeled tidal flushing under existing conditions for scenarios where stormwater is entering the lagoons.²⁶ Following the 2-year, 24-hour storm event, the Main Lagoon and the Model Yacht Basin would require 41 days to flush the stormwater from the lagoons and re-equilibrate with Bay waters. In the worst case, following the 100-year, 24-hour design storm, the Main Lagoon and the Model Yacht Basin would require 48 days to flush the stormwater from the lagoons and re-equilibrate with Bay waters.

Flooding

Flood Event Modeling

For purposes of this Draft EIR, Balance modeled flood events under existing conditions at the project site for the 24-hour duration, 2- and 100-year recurrence interval storm events to provide a baseline for evaluating potential flooding impacts both within Aquatic Park and upstream along the Potter and Strawberry storm drain trunk lines with project implementation. The modeling uses a similar modeling

²⁴ Laurel Marcus & Associates et al. *Aquatic Park Improvement Program (APIP)*. Prepared by Laurel Marcus & Associates and Hydrologic Systems, Inc., City of Berkeley, Berkeley, California, 2008, Table 5.

²⁵ Laurel Marcus & Associates et al. *Aquatic Park Improvement Program (APIP)*. Prepared by Laurel Marcus & Associates and Hydrologic Systems, Inc., City of Berkeley, Berkeley, California, 2008, Table 4.

²⁶ Laurel Marcus & Associates et al. *Aquatic Park Improvement Program (APIP)*. Prepared by Laurel Marcus & Associates and Hydrologic Systems, Inc., City of Berkeley, Berkeley, California, 2008, Table 27.

approach and input parameters to the tidal modeling presented in the APIP. The flood event simulations were modeled using DHI's "MIKE URBAN" software platform.²⁷ The model was run in an unsteady state mode with variable flood inflow hydrographs at the upstream end of the modeled system and a variable tidal water surface elevation at the downstream end of the modeled system. Modeling input parameters were generally adopted from those used in the APIP models and supplemented with storm drain information taken from the City of Berkeley's GIS database. The extents of the modeled storm drain system along the Potter and Strawberry storm drain trunk lines were extended further upstream than in the APIP modeling to capture potential flooding impacts in these lines as far upstream as San Pablo Avenue.

Inflow hydrographs representing the 24-hour duration, 2- and 100-year recurrence interval flood events were taken directly from the APIP. Inflow hydrographs were connected to the modeled system at each of the three basins to account for runoff from localized watersheds within and directly to the east of Aquatic Park. Hydrographs were also connected to the upstream ends of the Potter, Strawberry, and transite (running north to south through the east end of the park) storm drain trunk lines to account for runoff from the watersheds covering large portions of the City of Berkeley that drain into and around Aquatic Park.

Downstream tailwater conditions were defined in the model using variable water surface elevations in the San Francisco Bay as defined by NOAA's verified tidal data measured near the City of San Francisco at Station 9414290. A period of tidal record centered on the relatively high tide cycle of early January 2007 was selected for use in the model with the runoff hydrographs timed to have peak flow rates coincide with mean higher high water levels in the Bay.

The components of the existing conditions modeled geometry generally consist of junction nodes representing manholes, storage nodes representing basins, and links representing the pipes and open channels that connect the nodes. Overflows from the storm drain network are accounted for in the model with open channel reaches that route overflow from the manholes directly to the basins. A schematic map of the various storm drain features contained in the existing conditions model is included as Figure 4.3-7.

Large Storm Events. Existing condition modeling results at key locations within the system are presented in Table 4.3-5, which presents information on peak water surface elevations, overflow rates, and overflow volumes for the 2- and 100-year storm events.

2-Year Storm Event. Modeling results for the 2-year storm event estimate that the water level in the Main Lagoon would not rise above the elevations of the lowest structures surrounding the basin under existing conditions. However, the water level in the Model Yacht Basin would rise to an elevation of about 3.1 feet, or 1.1 feet above the elevation of the lowest adjacent structure, the nearby roadway at elevation 2.0 feet. Overflows from the storm drain network are estimated to occur on the Strawberry line upstream from San Pablo Avenue, and on the Potter line both upstream from San Pablo Avenue and adjacent to the Model Yacht Basin. The total estimated volume of stormwater currently spilled

²⁷ "DHI" refers to the software developer, and "MIKE URBAN" is the name of the computer model.



Source: Balance Hydrologics, Inc., 2011.

Table 4.3-5
2-Year and 100-Year Storm Event Existing Conditions

| | 2-Year Existing | 100-Year Existing |
|--|----------------------------|------------------------------|
| Main Lagoon, water surface elevation (ft) | -0.15 | 4.65 |
| Model Yacht Basin, water surface elevation (ft) | 3.13 | 4.65 |
| Total spill volume in developed areas of West Berkeley (acre-ft) | 60 | 361 |
| Total direct inflow volume to ML and MYB (acre-ft) | 136 | 499 |

Source: Balance Hydrologics Inc., 2012.

from the modeled storm drain network into developed portions of the city is estimated at 60 acre-feet. The total volume of direct (overland) inflows to the Main Lagoon and Model Yacht basin is estimated at 136 acre-feet. For illustrative purposes, these estimated volumes are equivalent to areas of approximately 60 and 136 football fields, respectively, covered with water to a depth of 1 foot. However, in reality, these flows are dispersed in both time and space, as the runoff occurs over a 24-hour period and is spread out over portions of the two major subwatersheds.

100-Year Storm Event. Modeling results for the 100-year storm event estimate that water levels in both the Main Lagoon and the Model Yacht Basin would rise above the elevations of the lowest adjacent structures under existing conditions. The model also indicates that water surface elevations in the Main Lagoon would take over a week to return to pre-storm levels. Overflows from the storm drain network are estimated to occur at a number of locations along the Potter and Strawberry storm drain trunk lines. The total estimated volume of stormwater spilled from the modeled storm drain network into developed portions of the City is estimated at 361 acre-feet. The total volume of direct (overland) inflows to the Main Lagoon and Model Yacht basin is estimated at 499 acre-feet.

Series of Storm Events. As noted above, the limitations on tidal exchange documented under existing non-storm conditions are magnified by storm events, resulting in lengthy drawdown times before water levels return to pre-storm elevations. Although not explicitly quantified in the hydraulic models, a series of moderate-sized storm events in swift succession could further increase the potential for flooding to the structures and improvements immediately surrounding the lagoons.

FEMA Status

Aquatic Park is covered by FEMA (Federal Emergency Management Agency) Flood Insurance Rate Map (FIRM) Panel 06001C0056G as included in the Flood Insurance Study (FIS) for Alameda County, California, effective August 3, 2009.²⁸ A portion of the site approximately bounded by the extent of the Main Lagoon lies within a FEMA Zone AE, which is defined as areas subject to inundation by the 1 percent annual chance flood event with Base Flood Elevations determined (Figure 4.3-8). Per the FIRM panel, the Base Flood Elevation within the Main Lagoon is set to 10 feet (NAVD) and is equivalent to the Base Flood Elevation in the adjacent portions of the San Francisco Bay.

²⁸ Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map (FIRM) for Alameda County, California, and Unincorporated Areas, Community Panel No. 56 of 725, Map No. 06001C0056G, 2009.



Source: FEMA FIRM, 2012.

A small portion of the site to the north of the Main Lagoon lies in a FEMA Zone X, which is defined as areas of 0.2 percent annual chance flood; areas of 1 percent annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1 percent annual chance flood.

Seiches and Tsunamis

Seiches are standing waves that occur in large, freestanding bodies of water, and are commonly created by seismically induced ground shaking (or volcanic eruptions or explosions). A tsunami is a series of waves caused by deformation of the ocean floor resulting in displacement of a sizeable volume of water, usually in response to an earthquake, volcanic eruption, or landslide. In mid-2009, the California Geological Survey and the California Emergency Management Agency released tsunami inundation maps for coastal California. The maps present a worst-case scenario of a tsunami following a major Alaskan earthquake, similar to the March 1964 event that resulted in wave oscillations in San Francisco Bay lasting more than 12 hours.²⁹ The inundation map for the Oakland West quadrangle, which includes the Berkeley shoreline and Aquatic Park, shows that waves would run up approximately 11 feet, inundating the entire park and areas to the east as far as 3rd Street, as well as the Ashby Street undercrossing.³⁰

Most recently, the 2011 Tohoku earthquake in Japan resulted in a small tsunami reaching the San Francisco Bay. According to a report to the California Coastal Commission, although major damage to infrastructure occurred in Santa Cruz Harbor and Crescent City Harbor, potential impacts were greatly reduced due to the fact that emergency preparedness plans had been prepared, the 9-hour lag time allowed for execution of these plans, the daytime landfall allowed for notifications when most people were still at home, and the tsunami waves arrived at the California coast at low tide, rather than high tide.³¹ Damage to the harbors was due to high-velocity currents resulting from rapid changes in water levels, not wave impacts. Whereas the maximum wave amplitude in the Crescent City Harbor was 8.1 feet, the waves observed at locations in San Francisco Bay were much smaller: approximately 2.0 feet in height at the Berkeley Marina and about 14 inches at the Marina Bay Yacht Club in Richmond.

Sea Level Rise

According to the most recent summary of potential impacts of global climate change (GCC) in California, sea level rise is anticipated at 16 inches above current levels by 2050.³² Over the longer-term, the state recently adopted a 55-inch value for sea level rise by 2100 to be used when planning

²⁹ State of California, Seismic Safety Commission, The tsunami threat to California, findings and recommendations on tsunami hazards and risk areas, December 2005, 16 pp.

³⁰ State of California, Tsunami Inundation Map for Emergency Planning, Oakland West Quadrangle, County of Alameda, produced by California Emergency Management Agency, California Geological Survey, and University of Southern California – Tsunami Research Center, July 31, 2009, 1:24,000 scale.

³¹ Ewing, L.E., the Tohoku tsunami of March 11, 2011: a preliminary report on the effects to the California coast and planning considerations: report to the California Coastal commission, April 11, 2011 (revised April 18, 2011), 40 p.

³² Pacific Council on International Policy, Preparing for the effects of climate change – a strategy for California: California Adaptation Advisory Panel report to the State of California, Nov. 21, 2010, 77 p.

construction of new or modified critical infrastructure. In October 2011, the San Francisco Bay Conservation and Development Commission (BCDC) voted to amend the San Francisco Bay Plan (Bay Plan) to create a climate change section incorporating these ranges of sea level rise in recognition that higher sea levels would increase shoreline erosion, degrade wetland habitat, expose larger areas to flooding, and worsen damage from major storms. The amendment revised findings and policies pertaining to tidal marsh and tidal flats, safety of fills, protection of shoreline, and public access, and it revised the Bay Plan to revise the upper end year 2100 sea level rise from 55 inches to up to 69 inches.³³

As noted above for risks from tsunamis, the area surrounding the Aquatic Park lagoons would be at heightened risk of impacts from sea level rise due to the low elevations and multiple connections to San Francisco Bay. According to the Association of Bay Area Governments (ABAG), Sea Level Rise Scenario Map for Long-Range Planning, under both the 16-inch sea level rise and 55-inch sea level rise scenario most of Aquatic Park would be inundated, but flooding would be primarily limited to areas west of the railroad tracks under existing conditions.^{34,35,36}

Water Quality

Given its location bordering central San Francisco Bay due east of the Golden Gate, it would be expected that water quality conditions in Aquatic Park should closely reflect conditions in the adjacent Bay waters. However, this is not typically the case because salinity, dissolved oxygen concentrations, and temperatures in the lagoons are generally less optimal for aquatic species than in the Bay. The two major factors influencing water quality in the Aquatic Park lagoon system are: (1) the constraints on tidal exchange because of the configuration of the lagoons and the size and number of pipes connecting them to municipal storm drains, the connection to the central Bay, and how those systems interact, and (2) stormwater inflows from the City of Berkeley storm drain system during the rainy season. In addition, an unquantified proportion of dry-season ‘nuisance’ flows from landscape runoff and other activities in the upgradient watershed, including illicit discharges (dumping), can enter the Main Lagoon and Model Yacht Basin through the connection from the Potter line, with the remainder discharged to the Bay.

³³ San Francisco Bay Conservation and Development Commission, “Resolution No. 11-08: Adoption of Bay Plan Amendment No. 1-08 Adding New Climate Change Findings and Policies to the Bay Plan; And Revising the Bay Plan Tidal Marsh and Tidal Flats; Safety of Fills; Protection of the Shoreline; and Public Access Findings and Policies, http://www.bcdc.ca.gov/proposed_bay_plan/10-01Resolution.pdf, accessed October 31, 2011.

³⁴ Knowles, N., Projecting Vulnerability to Inundation Due to Sea Level Rise in the San Francisco Bay and Delta, USGS Report, 2008, website: http://www.climatechange.ca.gov/events/2008_conference/presentations/2008-09-09/Noah_Knowles.pdf, accessed June 28, 2012.

³⁵ Siegel, S.W. and Bachand, P.A.M. Feasibility Analysis of South Bay Salt Pond Restoration, San Francisco Estuary, California. Wetlands and Water Resources report, 255 pp, 2002.

³⁶ Association of Bay Area Governments, Earthquake and Hazards Information: Shoreline Areas Vulnerable to Sea Level Rise, website: <http://gis.abag.ca.gov/Website/SeaLevelRise/index.html>, accessed June 28, 2012.

Physical Constraints

As summarized above under Tidal Hydrology and detailed in the APIP, tidal exchange between the Aquatic Park lagoons and the Bay is constrained by the limited number and degraded condition of the tide tubes, the lack of connection between Radio Tower Pond and the other two lagoons, the 24-inch diameter pipes connecting the Model Yacht Basin and the Main Lagoon, and the weir in the Strawberry line restricting inflows from the Bay to the Main Lagoon. The combined effect of this suite of incremental capacity limitations is an extremely muted tidal range, especially in the Main Lagoon and the Radio Tower Pond (refer to Table 4.3-4, above), and limited flushing, with predicted hydraulic residence times of 11 days under normal conditions, and 48 days following the 100-year storm event. In addition, water depths average less than 7 feet deep in the Main Lagoon, less than 5 feet deep in the Model Yacht Basin, and less than 2 feet deep in the very shallow Radio Tower Pond (Figures 4.3-1a and 4.3-1b). This limited flushing and poor internal circulation, combined with the generally shallow depths, are the primary causes of the low dissolved oxygen concentrations and high temperatures observed in the lagoons during warm months and periods.

Stormwater Runoff

During wet periods, lagoon water quality, particularly salinity levels, is also strongly influenced by storm runoff. Stormwater enters the lagoon system from local storm drains along the east side of the Main Lagoon, from the Potter line, and also from the Strawberry line but only during high tides and large storm events. Between storms and during the dry season, all non-storm runoff in the Strawberry line and most non-storm runoff in the Potter line are currently discharged directly to the Bay.

Pollutants typically found in urban stormwater include: heavy metals, petroleum hydrocarbons, nutrients, pesticides, trash (litter), bacteria and fine sediment. Concentrations of these contaminants are typically highest in runoff from the first sizeable rain event of the season (the “first-flush” event), or from storms occurring after a relatively long dry period, when contaminants are flushed from roofs, roads and other surfaces where they have accumulated. Depending upon their chemical properties and the environmental conditions, these constituents are subject to a variety of environmental fates including photodegradation, chemical or biological degradation, or precipitation and sequestration in bottom sediments. If undisturbed, these same sediments may also contain toxic constituents from historic land uses, such as legacy pesticides (e.g., DDT) or polychlorinated biphenyls (PCBs).

Neither the City of Berkeley nor the Alameda Countywide Clean Water Program (ACCWP) monitors urban runoff water quality in Berkeley. However, regional monitoring data from the initial years of NPDES municipal stormwater permit program implementation in the Bay Area provides some indication of local runoff water quality in the Berkeley setting. From 1989 to 1994, the Bay Area Stormwater Management Agencies Association (BASMAA) sponsored an extensive investigation of how stormwater contaminant levels varied by location and land use throughout the Bay Area.³⁷ The comprehensive analysis found no statistical difference in runoff water quality emanating from

³⁷ Woodward-Clyde Consultants, Baseline water quality of storm runoff in the San Francisco Bay Area, 1989 to 1994. Consulting report prepared for the Bay Area Stormwater Management Agencies Association (BASMAA), 2 volumes, 1995.

residential and industrial land uses, and attributed this result to the wide variability (e.g., size of lots, types of businesses, age of establishment, street widths, etc.) within each land use in the study area. Thus, the findings from this region-wide study should be applicable to the mix of residential, commercial, and light industrial uses in the watershed above Aquatic Park. The monitoring analysis showed that: (1) concentrations of dissolved metals (the most toxic form) in runoff from urban areas were generally less than the water quality objectives established by the Regional Board in the Basin Plan for the protection of aquatic life; (2) dissolved copper and dissolved zinc were the two metals whose concentrations most often exceeded the acute water quality criteria (the criteria most applicable to assessing stormwater impacts); and (3) dissolved copper, zinc, and lead, and total mercury were the metals whose concentrations most often exceeded the chronic water quality criteria.

As part of the regional study, lower Codornices Creek at 6th Street was monitored during five storm events from winter 1989 to spring 1992. The Codornices Creek watershed and the Aquatic Park watershed have similar land uses. Levels of dissolved metals never exceeded the acute criteria, but concentrations of dissolved copper and lead, and total mercury, exceeded the chronic criteria. Persistent pollutants, including organochlorine pesticides and polyaromatic hydrocarbons (PAHs), were identified in some sediment samples.

Water Quality in the Aquatic Park Lagoons

The City of Berkeley does not monitor water quality in the Aquatic Park lagoons, and no systematic, comprehensive water quality study of the lagoon system has been conducted. No monitoring has been conducted in the Model Yacht Basin or the Radio Tower Pond. However, the Model Yacht Basin would be expected to have the best water quality due to better connectivity with the Bay through the Potter Street storm drain. The Radio Tower Pond would be expected to have the worst water quality due to its extremely shallow depth, lack of connection to the other two lagoons, and limited connection to the Bay through a single, partly-collapsed tide tube. Several short-term studies over the past two decades have looked at water quality in the Main Lagoon, primarily focusing on salinity, temperature and dissolved oxygen levels. Each of these studies has concluded that Aquatic Park suffers from poor water quality conditions caused by limited circulation between the lagoons and the Bay. No monitoring has been conducted in the Model Yacht Basin or the Radio Tower Pond. The Radio Tower Pond would be expected to have the worst water quality due to its extremely shallow depth, lack of connection to other lagoons, and limited connection to the Bay through a single, partly-collapsed tide tube.

Haltiner summarized several studies of Aquatic Park conducted by students at the University of California, Berkeley during the 1980s.³⁸ Salinity in the central Bay is typically 32 to 35 parts per thousand (ppt) during non-storm periods, or approximately 25 ppt across all conditions.³⁹ Although sampling was sporadic, the UC Berkeley studies at Aquatic Park reported salinities ranging from 17 ppt in the Main Lagoon in July 1989 to values similar to those in the Bay, reflecting the influence of freshwater inflows through local storm drains under both wet- and dry-weather conditions. One study

³⁸ Haltiner, J., Hydrology and water quality: Berkeley Aquatic Park, A consulting report prepared by Philip Williams & Associates, Ltd. 21 pp, 1990.

³⁹ San Francisco Estuary Institute, Station CB05W, 2010, <http://eis.sfei.org/wqt>.

also looked at bacteria levels in the lagoons and found that fecal coliform levels during winter months exceeded the water quality objectives for both contact and noncontact recreation.

Water temperature, salinity and dissolved oxygen are often stratified (non-uniformly distributed) in enclosed water bodies, characterized by little vertical mixing or internal circulation, such as the lagoons. It is expected conditions near the bottom of the lagoon would be more saline and colder because freshwater is less dense than salt water, and warm water is less dense than cold water. In addition, it would be expected that dissolved oxygen levels would be lower with increased distance from the air-water interface, and with higher oxygen demand due to respiration from benthic biota and decomposition of plant and animal remains. Temperature and salinity probes installed at 1-foot and 8-foot depths in the Main Lagoon and monitored for one week in August 2002 showed a diurnal stratification pattern for temperature, but not for salinity, suggesting that stratification is a temporary and occasional phenomenon and not a regular condition. Water temperatures ranged from 20 to 26 °C at the surface and from 20 to 24°C near the bottom, with surface waters up to 5 °C warmer by late afternoon, then cooling to the same temperature by evening.⁴⁰

The Surface Water Ambient Monitoring Program (SWAMP) monitored water temperatures and dissolved oxygen levels at three locations in the Main Lagoon for one week in June and again in September 2004. Temperatures differed little among the three stations, ranging from about 19.5 to 24.5 °C in June, and cooling slightly to about 18 to 23 °C in September. Dissolved oxygen concentrations during both periods were consistently lower at the northern station than at stations further south, although levels at all three stations regularly approached or dropped below the 5.0 milligrams per liter (mg/L) water quality objective established in the Basin Plan for Bay waters downstream of the Carquinez Bridge where fish spawning is not a designated existing beneficial use. In terms of dissolved oxygen levels, water quality is better in the southern portion of the Main Lagoon. For comparison, the long-term average (1993-2007) temperature in the central Bay is 15.5 +/- 3.2 °C, while the long-term average dissolved oxygen concentration is 8.3 +/- 1.5 mg/L.

Regulatory Setting

Federal

Federal and state water quality regulations apply to projects that may adversely affect the quality of surface waters or groundwater. The California State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs) have the authority in California to protect and enhance water quality, both through their designation as the lead agencies in implementing Section 319 non-point source program of the federal Clean Water Act (CWA) and from the State's primary water-pollution control legislation, the Porter-Cologne Water Quality Control Act (PCWQA). CWA Section 303 and the PCWQCA establish water quality objectives for all waters in the State. These objectives are implemented locally through Water Quality Control Plans, the National Pollutant Discharge Elimination System (NPDES) permits, and waste discharge requirements.

⁴⁰ Laurel Marcus & Associates et al. *Aquatic Park Natural Resource Management Study (NRMS)*. Prepared by Laurel Marcus & Associates, Hydrologic Systems, Inc., Hydroikos Associates, and Vallier Design Associates. City of Berkeley, Berkeley, California, 2003.

As described in more detail in Section 4.2, Biological Resources, because hydrology is inextricably linked to ecosystem and wildlife health, the California Department of Fish and Game (CDFG) also has regulatory oversight of projects that affect lakes, streambeds, and adjacent riparian zones.

Clean Water Act Section 404

Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers (Corps) has jurisdiction to issue permits regulating the placement of dredged or fill material into waters of the United States. The Corps decides if the project will require a nationwide permit or an individual permit; an individual permit is required if the impacts are more than minimal or if the project does not comply with the nationwide permit conditions. Before the Corps issues a permit a project must comply with the guidelines established in Section 404 (b)(1). The applicant for the permit must demonstrate that there are no practicable alternatives that would not involve the filling of the wetlands. The first step in this process is to receive a 401 water quality certification or a waiver from the Regional Board. The conditions of the 401 permit must be included in the 404 permit.

The Rivers and Harbors Appropriation Act of 1899 prohibits the unauthorized construction of structures in, under, or over navigable waters. It also gives the Corp the authority to regulate activities including dredging, disposal of dredged or fill material, or any other activity that could affect the extent of reach of traditionally navigable waters of the United States.

State

NPDES General Permit for Discharges of Stormwater Associated with Construction Activity

Construction of the salt/brackish water wetland, the habitat improvements to Bird Island, and the berm to protect the Radio Transmitter Building in the Radio Tower Pond would disturb an area exceeding 1 acre. Therefore, the Preferred Project would be required to submit a Notice of Intent (NOI) to the State Board and apply for coverage under the NPDES Construction General Permit. The State Board adopted a revised permit (Order No. 2009-009DWQ) on September 2, 2009, and it became effective July 1, 2010. Administration of this permit has not been delegated to cities, counties, or Regional Boards, but remains with the State Board. Enforcement of permit conditions is the responsibility of Regional Board staff, assisted by local municipal or county staff.

Compliance with the initial NPDES Construction General Permit (Order 99-08-DWQ) required a project contractor to prepare a Stormwater Pollution Prevention Plan (SWPPP) and submit it to the City for review prior to commencing construction. The SWPPP details the site-specific Best Management Practices (BMPs) to control erosion and sedimentation and maintain water quality during the construction phase. The SWPPP also contains a summary of the structural and nonstructural BMPs to be implemented during the post-construction period, pursuant to the nonpoint source practices and procedures encouraged by the San Francisco Bay RWQCB. Once grading begins, the SWPPP must be kept on site and updated as needed while construction progresses.

Compliance with the revised permit maintains the requirement to develop a SWPPP and submit it to the City for review. However, a project contractor must now also calculate a sediment/erosivity risk factor

based on the site setting and construction schedule, and a receiving water risk factor based on whether the receiving water body is State-listed for sediment or turbidity impairment (mostly North Coast streams) or has State-designated beneficial uses of spawning (SPWN), migration (MIGR) and COLD (coldwater habitat). The two factors combined determine if a project is placed into the Risk Level 2 (most sites) or the Risk Level 3 category. Both categories of projects are now required to develop a Rain Event Action Plan (REAP) to protect exposed areas of the site. The REAP is triggered 48 hours before a National Oceanic and Atmospheric Administration (NOAA)-predicted (50 percent probability) rain event. Risk Level 2 sites are required to visually monitor and sample/analyze effluent discharged from storm events. Discharges should meet technology-based Numeric Action Levels (NAL) for pH and turbidity (the turbidity NAL is 250 NTU) that, if exceeded, would trigger the need for further action.

The revised permit also expands the scope of actions required to control pollutants at the post-construction stage by requiring incorporation of Low Impact Design (LID) design practices to minimize or mitigate hydrologic impacts and meet new development and redevelopment performance standards. However, implementation of this portion of the permit has been deferred to facilitate better integration with the revised statewide NPDES Phase 2 or Small MS4 permit. As of the publication of this Draft EIR, the revised permit has not been issued.

Regional

San Francisco Bay Region Water Quality Control Plan

The San Francisco Bay RWQCB (Region 2) office guides and regulates water quality in streams and aquifers within portions of the nine counties surrounding San Francisco Bay through designation of beneficial uses, establishment of water quality objectives, administration of the NPDES permit program for stormwater and construction site runoff, and Section 404 water quality certification where development results in fill of jurisdictional wetlands or waters of the US.

The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) presents the beneficial uses that the Regional Board has specifically designated for local aquifers, streams, marshes, rivers, and the Bay and Delta, as well as the water quality objectives and criteria that must be met to protect these uses. The Basin Plan identifies Aquatic Park as a significant surface water with estuarine habitat (EST), fish migration (MIGR), wildlife habitat (WLD) and water contact and non-contact recreation (REC-1, REC-2) as existing beneficial uses, and fish spawning (SPWN) as a potential beneficial use.⁴¹

Pollution due to upgradient urban development, principally constituents typically found in urban runoff (e.g., nutrients, pesticides, bacteria, heavy metals, petroleum products, heavy metals, and pesticides), as well as sediment releases from wetland restoration and modification of infrastructure in and surrounding Aquatic Park, could potentially degrade water quality for sensitive aquatic and terrestrial wildlife species in the lagoons and adjacent waters of the Central Bay. Water quality objectives

⁴¹ Regional Water Quality Control Board, San Francisco Bay Region (Region 2), *Water Quality Control Plan (Basin Plan)*, as amended, December 2011.

established in the Basin Plan to protect these beneficial uses from the types of potential pollutants that could be generated by the Preferred Project are included in Table 4.3-6.

**Table 4.3-6
Basin Plan Water Quality Objectives to Protect Beneficial Uses**

| Parameter | Water Quality Objective |
|--|--|
| Dissolved Oxygen | <p>The median dissolved oxygen concentration for any three consecutive months shall not be less than 80 percent of the dissolved oxygen content at saturation.</p> <p>7.0 mg/L minimum for all tidal water upstream of the Carquinez Bridge 5.0 mg/L minimum for all tidal water downstream of the Carquinez Bridge</p> <p>Nontidal waters: 5.0 mg/L minimum in waters designated WARM 7.0 mg/L minimum in waters designated COLD 7.0 mg/L minimum in waters designated SPWN</p> |
| Salinity | Controllable water quality factors shall not increase the total dissolved solids or salinity of waters of the state so as to adversely affect beneficial uses, particularly fish migration and estuarine habitat. |
| Suspended Material and Settleable Material | Waters shall not contain suspended material or substances in concentrations that cause nuisance or adversely affect beneficial uses. |
| Sediment | The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses. Controllable water quality factors shall not cause a detrimental increase in the concentrations of toxic pollutants in sediments or aquatic life. |
| Turbidity | Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases from normal background light penetration or turbidity attributable to waste discharge shall not be greater than 10 percent in areas where natural turbidity is greater than 50 NTU. |
| pH | The pH shall not be depressed below 6.5 nor raised above 8.5. Controllable water quality factors shall not cause changes greater than 0.5 units in normal ambient pH levels. |
| Oil and Grease | Waters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in visible film or coating on the surface of the water or on objects in the water, or that otherwise adversely affect beneficial uses. |
| Floating Material | Waters shall not contain floating material, including solids, liquids, foams, and scum, in amounts that cause nuisance or adversely affect beneficial uses. |
| Temperature | <p>The natural receiving water temperature of inland waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses.</p> <p>At no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5°F (2.8°C) above natural receiving water temperature.</p> |
| Bioaccumulation | Many pollutants can accumulate on particles, in sediment, or bioaccumulate in fish and other aquatic organisms. Controllable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life. Effects on aquatic organisms, wildlife, and human health will be considered. |

Table 4.3-6
Basin Plan Water Quality Objectives to Protect Beneficial Uses

| Parameter | Water Quality Objective |
|-------------------|--|
| Coliform Bacteria | <p>Non-contact water recreation (REC-1): Mean < 2000 MPN¹/100ml fecal coliform</p> <p>Water contact recreation (REC-2): Geometric mean < 200 MPN/100ml fecal coliform and 90th percentile < 400 MPN/ 100ml; median < 240 MPN/100ml for total coliform with no sample greater than 10,000 MPN/100ml; Geometric mean < 35 MPN/100ml enterococcus bacteria with no sample > 104 MPN/100ml.</p> <p>The U.S. EPA has established bacteriological criteria for REC-1 waters. Waters that are lightly used have maximum values for freshwater of 108 colonies/100ml enterococci and 406 colonies/100ml E. coli, and 276 colonies/100ml enterococci in salt water and 298 #/100mL for E. Coli. These values decrease for areas receiving greater use.</p> |
| Toxic Pollutants | <p>All waters shall be maintained free of toxic substances in concentrations that are lethal to or produce detrimental physiological responses in aquatic organisms. Detrimental responses include, but are not limited to, decreased growth rate and decreased reproductive success of resident or indicator species. There shall be no acute toxicity in ambient waters. Acute toxicity is defined as a median of less than 90 percent survival, or less than 70 percent survival, 10 percent of the time, of test organisms in a 96-hour static or continuous flow test.</p> <p>There shall be no chronic toxicity in ambient waters. Chronic toxicity is a detrimental biological effect on growth rate, reproduction, fertilization success, larval development, population abundance, community composition, or any other relevant measure of the health of an organism, population, or community.</p> <p>The health and life history characteristics of aquatic organisms in waters affected by controllable water quality factors shall not differ significantly from those for the same waters in areas unaffected by controllable water quality factors.</p> <p>Numerical objectives for toxic pollutants in surface waters are provided in the Basin Plan (Tables 3-3, 3-3A, 3-3B, 3-3C, 3-4 and 3-4A).</p> |
| Pesticides | <p>No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses.</p> |

Source: San Francisco RWQCB, Basin Plan, as amended, December 2011.

Note:

1. MPN = Most Probable Number

The State Water Resources Control Board has placed the central Bay on the CWA 303(d) list as being water quality impaired for specific constituents, including: chlordane, DDT, diazinon and dieldrin, doxin and furan compounds, invasive species, mercury, PAHs, PCBs, PBDEs, selenium and trash. As required by Section 303(d) of the Clean Water Act, once waters are listed for a particular pollutant, a total maximum daily load (TMDL) must be developed to restore water quality to a level consistent with the applicable water quality standard. The TMDL accounts for all contributions, both point sources and diffuse (non-point, landscape-scale) sources, of that pollutant to the water body. In California, when implementation of the TMDL occurs it is incorporated into the Water Quality Control Plan or Basin Plan. For example, the TMDL to reduce mercury and methylmercury in San Francisco Bay⁴² was

⁴² Regional Water Quality Control Board, San Francisco Bay Region (Region 2), Mercury in San Francisco Bay: proposed Basin Plan amendment and staff report for revised total maximum daily load (TMDL) and proposed mercury water quality objectives, 2006.

completed in 2006 and subsequently approved by USEPA in February 2008. TMDLs for many of the other constituents of concern listed above for the central Bay are currently under development.

NPDES Municipal Regional Stormwater NPDES Permit

The 1987 amendments to the CWA (Section 402[p]) provided for EPA regulation of several new categories of nonpoint pollution sources within the existing NPDES program. In Phase I, NPDES permits were issued for urban runoff discharges from municipalities of over 100,000 people, from industrial plants in industries recognized by the US EPA as being likely sources of stormwater pollutants, and from construction activities that disturb more than 5 acres. Phase II implementation, effective March 10, 2003, extended NPDES urban runoff discharge permitting to cities of 50,000 to 100,000 people, and to construction sites which disturb between 1 and 5 acres.

The US EPA has delegated management of California's NPDES Municipal Stormwater Permit program to the State Board and the nine Regional Boards. Through fall 2009, stormwater discharges from urbanized portions of the Bay Area were regulated through Phase 1 of the California program. Counties and municipalities obtained coverage under the permit by joining together into Countywide programs to develop comprehensive stormwater management plans. With adoption of the Municipal Regional Stormwater NPDES Permit (MRP) by the Regional Board as Order No. R2-2009-0074 on October 14, 2009, urban stormwater in Alameda, Contra Costa, San Mateo and Santa Clara counties, as well as the Fairfield-Suisun region and the City of Vallejo, must now be managed within a regional framework. In Alameda County, programs to implement the goals of the NPDES stormwater permit and the MRP are overseen by the Alameda Countywide Clean Water Program which provides a number of resources related to stormwater management.

The MRP was adopted to meet a number of regulatory goals of the Regional Board, including standardization of permit requirements that previously varied from county to county and the introduction of new permit provisions. Many of the new permit provisions address improved stormwater management for new development through implementation of LID measures as outlined in Section C.3.c of the MRP. These measures, which include source control, site design, and treatment requirements to reduce the amount of stormwater runoff, are essentially the same as those included in the previous Alameda Countywide NPDES Permit. The most significant change in the new permit framework is the requirement to implement LID measures for stormwater treatment, and, if LID measures cannot be used, to implement alternative or in-lieu compliance provisions as described in Section C.3.e.

The MRP identifies appropriate LID stormwater management measures as: rainwater harvesting and re-use, infiltration, evapotranspiration, and biotreatment, while emphasizing that biotreatment systems are only to be used where it is practically infeasible to utilize the other three cited measures. The 2008 APIP report explored how LID measures might be used to control peak runoff flows and enhance runoff water quality in the area served by the six local storm drain systems just east of Aquatic Park. Consistent with the MRP, the City's recently-released Watershed Management Plan places significant emphasis on the LID/GI (Low Impact Development/Green Infrastructure) approach to assist in controlling flooding, reducing stormwater pollution, and avoiding habitat degradation.

In addition, Section C.3.i. of the MRP requires all development projects that replace 2,500 to 10,000 square feet of impervious surface to install one or more design measures directing runoff to cisterns, rain barrels and vegetated areas, or constructing paths, walkways, bike lanes, sidewalks and driveways with permeable surfaces (e.g., pervious concrete, porous asphalt, unit pavers, and granular materials).

Resolutions 70-7 and 70-14

The San Francisco Bay Regional Board adopted Resolution 70-7 on January 29, 1970 and Resolution 70-14 on February 26, 1970.⁴³ Resolution 70-7 responded to fish kills in the Main Lagoon by requesting that the City submit a report at the February 26 meeting describing how circulation in the lagoon system might be improved, in conjunction with other measures to address excessive growth of algae and aquatic plants. The resolution also invited the City to a public hearing at the February 26 meeting to consider a prohibition on stormwater discharges to the lagoons, thereby addressing ongoing waste discharges to the lagoon by several West Berkeley industrial firms, as well as stormwater discharges from the upgradient watershed. Resolution 70-14 stated that, “The discharge of all wastes, including storm drainage that may contain wastes, to the Berkeley Aquatic Park Lagoon is prohibited effective July 1, 1971 pursuant to Section 13243 of the California Water Code.” In addition to requiring the City to “take actions which will eliminate all storm drainage which may contain wastes to the Berkeley Aquatic Park Lagoon”, the resolution also urged the City to (1) connect the industrial dischargers to the sanitary sewer system, eliminating discharge of all industrial wastes to the lagoon; (2) initiate a program to remove wastes from storm drains that would continue to discharge to the lagoon; (3) take measures to increase circulation and improve water quality in the lagoon; and (4) control aquatic plant growth to levels preventing adverse impacts on fish.

Because neither Resolution 70-7 nor Resolution 70-14 has been rescinded, they remain in force today. However, the City has largely addressed the concerns prompting promulgation of the two resolutions: (1) industrial discharges to the lagoon were eliminated in the early 1970s; and (2) later in the decade, the transite pipe, flow separators, and oil/water separators were installed to divert and treat much of the runoff from the storm drain systems serving the Parker, Carleton, Grayson, and Heinz Street neighborhoods, thereby reducing stormwater inflows to the lagoon. Subsequent efforts by the City Public Works Department to eliminate illicit discharges to storm drains and enhance runoff water quality have been ongoing and, for the last 20 years, have been implemented in conjunction with measures undertaken through the Alameda Countywide Clean Water Program. These two resolutions would likely be rescinded when new permits are issued to implement the APIP.

NPDES Permit for Dredging

As currently configured, the project will need dredging permits from the San Francisco Bay Conservation and Development Commission (BCDC), the U.S. Army Corps of Engineers (Corps), and the San Francisco Bay RWQCB to construct the headwall at the outlet of the five tide tubes passing from the Main Lagoon under Interstate 80 to the Bay. For work within the lagoons, the project will

⁴³ Regional Water Quality Control Board, San Francisco Bay Region (Region 2), Resolution No. 70-14, water Quality Control Plan for Berkeley Aquatic Park Lagoon, Pursuant to Chapter 4, Article 3, Porter-Cologne Water Quality Control Act, adopted Feb. 26, 1970.

need permits from the Corps and the San Francisco Bay RWQCB to install the modified storm drain infrastructure to improve tidal circulation.

Projects within 100 feet of the Bay shoreline fall under the jurisdiction of the BCDC (see below). In addition, if the tidal area is owned by the State, then application for a lease must be filed with the California State Lands Commission (see below). Applicants for dredging permits along the San Francisco Bay shoreline must file their permit through the Dredged Material Management Office (DMMO), which is made up of the BCDC, the Regional Board, the State Lands Commission, the EPA, and the San Francisco District office of the Corps.

Additionally, under CWA Section 404, the Corps is responsible for regulating the discharge of fill material into waters of the United States. The Regional Board is responsible for implementing Section 401 of the CWA and for upholding state water quality standards. Pursuant to CWA Section 401, projects that apply for a Corps permit for discharge of dredge or fill material, and projects that qualify for a Nationwide Permit, must also obtain water quality certification.

Although the project will need to file separate permit applications with the DMMO, BCDC, Corps, and Regional Board, the information required by each agency can be entered into a Joint Aquatic Resource Permit Application (JARPA) form and included with each application.

San Francisco Bay Conservation and Development Commission (BCDC)

BCDC has jurisdiction over projects within 100 feet of the Bay shoreline, which would include the proposed headwall construction to protect the tide tubes connecting the Main Lagoon to the Bay. However, because tidal flows into Aquatic Park are partially controlled by gates, BCDC staff determined that their jurisdiction does not apply to infrastructure construction projects within the Aquatic Park lagoons.⁴⁴

California State Lands Commission

The California State Lands Commission (SLC) has jurisdiction and management responsibility over certain public lands of the State, including “sovereign” lands acquired from the federal government at statehood in 1850. These lands include tidal and submerged lands underlying most of San Francisco Bay. SLC staff confirmed that no lease from the agency would be required for the proposed tide tube headwall construction on tidal lands just west of Interstate 80 because these lands were granted to the City of Berkeley under legislative statutes No. 347 (1913), 218 (1961) and 55 (1962).⁴⁵

⁴⁴ City of Berkeley, *Aquatic Park Natural Resource Management Study (NRMS)*, prepared by Laurel Marcus & Associates, Hydroikos Associates, Hydrologic Systems, and Vallier Design Associates, July 2003.

⁴⁵ Grace Kato, personal communication from State Lands Commission to Chris White, Balance Hydrologics, June 28, 2012.

Local

City of Berkeley General Plan

The Hydrology and Water Quality chapter of the Berkeley General Plan⁴⁶ contains a number of policies related to preservation and enhancement of water quality, and reduction of flood hazards, including:

- Policy EM-23 requiring maintenance of an effective street sweeping and cleaning program;
- Policy EM-27 promoting daylighting of creeks;
- Policy EM-28 advancing improved water supply to creeks through measures to reduce stormwater pollution and increase runoff infiltration;
- Policy EM-29 seeking increased public awareness and outreach regarding of healthy watershed conditions and aquifers; and
- Policy S-27 to reduce existing flood hazards.

City of Berkeley Municipal Code

In 1989, the City of Berkeley passed Berkeley Municipal Code Chapter 17.08 (BMC 17.08), the Preservation and Restoration of Natural Water Courses Ordinance. The purpose of this ordinance, recently updated, is to regulate development near open creeks, building over or near culverted creeks, and to prohibit the obstruction or interference of watercourse flow in open creeks, as well as to encourage rehabilitation and restoration of natural waterways and promote responsible management of the watersheds. Permits from the City Engineer are required for the construction or placement of any wall, culvert, drain, bulkhead, riprap, or other structure in any natural watercourse or creek in the City.

The Alameda Countywide Clean Water Program (ACCWP), a consortium of local municipalities and County agencies, was first issued a county-wide NPDES permit in 1991. The Program's comprehensive stormwater management plan included a model stormwater ordinance, which the City of Berkeley adopted and promulgated in Berkeley Municipal Code Chapter 17.20 (BMC 17.20), as well as Conditions of Approval" for development and redevelopment projects to reduce impacts to stormwater quality and local waterways to the maximum extent practicable.

City of Berkeley Revised Proposed 2000 Draft Aquatic Park Master Plan

By design, the proposed alterations of Aquatic Park should be consistent with the goals and policies established in the Revised Proposed 2000 Draft Aquatic Park Master Plan. The revised plan updates the original 1990 document, establishing the focus of the Natural Resources Management Plan which, when completed in 2003, led to development of the Aquatic Park Improvement Program. The relevant goal and associated strategy are outlined below.

⁴⁶ City of Berkeley, General Plan: IV Setting, Impacts and Mitigation Measures, J. Hydrology and Water Quality, 2002.

Goal 1: Enhance natural resources and systems within the Park by restoring, expanding and maintaining the Park's wildlife habitat and improving water circulation and quality. As part of this approach, protect and enhance the south end of the park as a bird sanctuary.

Strategy 1.1 to achieve Goal 1 was to "Create a Natural Resources Management Plan for the Park that will:

- Provide water quality improvement and monitoring recommendations.
- Provide detailed recommendations and plans for improving circulation between the Bay and lagoons, and between the lagoons.
- Evaluate the hydrological benefit of establishing one or more aeration fountains at the north end of the Main Lagoon.
- Evaluate options and provide recommendations for re-structuring the Park's lagoon shorelines and establishing additional islands.
- Include detailed recommendations and plans for enhancing and managing the Park's Eastside creeks and other drainages.
- Include habitat restoration, enhancement and management recommendations, and identify issues, guidelines and required permits for habitat restoration projects.
- Include specific proposals for enhancing and expanding freshwater and saltwater marshes.
- Recommend a set of upland and shoreline planting palates for the Park that will provide habitat for wildlife, encourage native species, discourage invasive non-natives, be aesthetically pleasing, and be compatible with proposed Pedestrian Overcrossing and sound barrier plantings.
- Evaluate the effect of existing and proposed uses on the Park's natural resources.
- Recommend specific on-going maintenance tasks and scheduling to ensure good water circulation and quality and healthy wildlife habitat within the Park.

City of Berkeley Watershed Management Plan (WMP)

The recently adopted WMP is intended to guide management of the City of Berkeley's urban water resources and evolve as new information is developed and new opportunities become available.⁴⁷ Grounded in a baseline assessment of the varying physical conditions in the 11 unique watersheds wholly or partly within the City's boundaries, the WMP addresses and integrates topics such as urban runoff water quality, creek health and restoration, flooding, and compliance with the NPDES MRP for stormwater discharges. The City's current perspective on these issues is presented, as well as recommendations for future improvements. In particular, the WMP highlights the LID and GI strategies advanced by the MRP as means to both conserve water and reduce costs of traditional stormwater conveyance infrastructure while improving water quality. These LID/GI approaches are

⁴⁷ City of Berkeley, Watershed Management Plan, October, 2011, 106 p. + appendices.

also an important toolbox to reduce runoff volumes and velocities, thereby avoiding degradation of stream channels. The multi-objective, green approach is complemented by more conventional engineering assessments of public storm drain infrastructure and the maintenance and management needs of these facilities, as well as the coordination required between public staff and private landowners to manage stream channels and storm drains that are interlaced between public right-of-ways and private properties.

Impacts and Mitigation Measures

Standards of Significance

The Preferred Project would have a significant impact on hydrology or water quality if it would:

- Violate any water quality standards or waste discharge requirements (i.e., as established by the San Francisco Bay RWQCB);
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Expose people or structures to a substantial risk of inundation by seiche, tsunami, extreme high tides, sea level rise, and/or mudflow.

Methodology

The hydrologic, drainage, and water quality assessments of the Preferred Project contained in this section are based upon the following:

Literature Search. In addition to the 2003 NRMS and the 2008 APIP, geology, soils, groundwater and surface water quality studies for the area of the project site and vicinity were obtained and reviewed. Federal, State, regional and local laws, ordinances and guidance regulating drainage and stormwater management at the project site were also researched and reviewed.

Monitoring. For the 2008 APIP, HSI monitored water levels from January to February 2007 to assess the tidal regime within the lagoons and compare conditions to tidal fluctuations in the central Bay.

Stormwater Modeling. As part of the 2003 NRMP and the 2008 APIP, HSI developed a hydraulic model to assess conveyance and circulation patterns in the lagoons and surrounding storm drainage infrastructure for existing and Preferred Project conditions. Results from the model were used to assess exchange volumes and tidal variations in the lagoons across an average tidal cycle as well as flushing rates during 2- and 100-year recurrence interval flood events. A detailed summary of the modeling approach, assumptions, and results can be found in the APIP Technical Report.

A subsequent modeling effort was completed by Balance to assess potential flooding impacts in the storm drain networks upstream from Aquatic Park for existing and Preferred Project conditions. Overflow volumes from the Strawberry and Potter Street storm drain trunk lines were assessed for the assumed 2- and 100-year flood flows along with flood level water surface elevations in the basins. The model is described in detail in under the “Flooding” subheading in the Environmental Setting portion of this section.

Field Reconnaissance. Balance staff visited the project site on several occasions in winter 2009 and 2010 to assess existing conditions related to on-site drainage and local stormwater inflows from adjacent off-site contributing areas.

Project Drainage Components. As detailed in the Section 3, Project Description, of this Draft EIR, the proposed Aquatic Park Improvement Project includes drainage elements that are designed for the following purposes:

- Improve water quality and aquatic habitat conditions in the three lagoons;
- Increase tidal circulation and tidal exchange volume through the lagoons;
- Prevent storms flows that contain the highest concentrations of contaminants (i.e., initial flows from significant rainfall events) from entering the lagoons; and
- Reduce contaminant loading into the lagoons from direct overland storm runoff.

The principal APIP drainage elements, which are common to both the Preferred Project and the alternatives, are listed below. Details are provided in Section 3, Project Description, of this Draft EIR.

- Enlargement of the Potter storm drain connection to the Model Yacht Basin from the existing two 24-inch pipes to two 3 x 5 foot box culverts;
- Installation of actuated slide gates on each new culvert connection to enable control of storm runoff flows from the Potter Street storm drain to the Model Yacht Basin;

- Construction of a 20-foot bottom width trapezoidal channel through the berm separating the Model Yacht Basin from the Main Lagoon to replace the existing two 24-inch pipes;
- Modification of the Strawberry storm drain connection to the Main Lagoon by removing the existing weir separating the drain from the lagoon and installing an actuated slide gate in the connection. Operation of the gates would be similar to the gates in the Potter Street storm drain connection;
- Cleaning and repair of the northern tide tube and the five main tide tubes connecting the central portion of the Main Lagoon to the Bay, thereby restoring much of the flow capacity of the tubes and improving tidal exchange in the Main Lagoon; and
- Installation of a new 12-inch pipe connection between the Radio Tower Pond and the Potter storm drain to provide tidal flows from the Bay into and out of the pond.

The three alternatives under consideration (the Preferred Project, No SW-Sealed, and No Additional SW) differ in how stormwater inflows from the Strawberry line and the Potter line into the lagoons would be regulated. Under the Preferred Project as recommended by the City Parks and Recreation Commission and adopted by the City Council for purposes of environmental review, stormwater in the Potter and Strawberry lines would be prevented from entering the lagoon system via regulation of the slide gates to be installed on the storm drain connections. The gates would remain open until runoff from a storm raises water levels in the storm drain sufficient to flow into Aquatic Park, which would then trigger their closure. Once the gates have closed, they would not reopen until water levels in the Strawberry and Potter lines receded. The Preferred Project is designated as “No Stormwater-Unsealed Manholes” (No SW-Unsealed) because the manholes along the upgradient portion of the Potter line would remain unsealed.⁴⁸

After modeling indicated that implementation of the Preferred Project would likely result in overflows from the Potter line above Aquatic Park during 2-year and larger storms, an option identical to the Preferred Project, except that the manholes on the Potter line adjacent to the lagoons would be sealed, was evaluated. This alternative is designated as “No Stormwater-Sealed Manholes (No SW-Sealed).

The conceptual design recommended in the APIP Technical Report, Alternative 4B, is designated as the “No Additional Stormwater” alternative (No Additional SW). Under this alternative, similar to the No SW-Sealed, the gates on the storm drain would remain open during dry periods to facilitate tidal exchange, and close upon initiation of flow in the upstream storm drain network. However, the gates to the lagoons would re-open during flood events equal to or larger than the 2-year storm that could threaten to cause increased flooding upstream.

This section of the Draft EIR analyzes the hydrology and water quality impacts of the Preferred Project. The two project alternatives are evaluated in Section 5, Alternatives, of this Draft EIR.

⁴⁸ The rim of manhole covers can be sealed to prevent stormwater from overflowing and spilling from the manholes. The sealant would be similar to a gasket so that manhole covers could still be removed for maintenance purposes.

Environmental Analysis

HYD-1 Construction of the Preferred Project could violate water quality standards or waste discharge requirements (i.e., as established by the San Francisco Bay RWQCB). (PS)

The Preferred Project would have a significant impact on water quality if it results in the direct release of pollutants or stormwater discharge to the Aquatic Park lagoons during construction that exceeds narrative or numerical water quality standards established by the San Francisco Bay RWQCB (see Table 4.3-7), or violates the conditions set forth in the NPDES Construction General Permit, or the Berkeley Municipal Code. Impacts could also occur if construction of the Preferred Project results in mobilization of contaminated sediment currently sequestered on the lagoon bottom or discharge of contaminated soils to the lagoon, or if project implementation decreases water quality in an aquifer used for potable supply.

The potential water quality impacts of construction of the Preferred Project are assessed below. Potential impacts of the Preferred Project on erosion, siltation or turbidity levels in the Aquatic Park lagoons are discussed separately under HYD-4.

Mobilization of Polluted Sediment During Project Construction. Construction of a number of features included in the Preferred Project would disturb soils adjacent to the lagoons (e.g., the channel between the Main Lagoon and the Model Yacht Basin; raising Bird Island; and wetland construction), or sediments in the Bay or within the lagoons themselves (tide tube repairs; new outlets for the Potter Street storm drain; slide gate installation on the Strawberry and Potter Street storm drains). Upland portions of Aquatic Park were largely constructed from soil excavated during freeway construction; fill from other sources may also underlie some areas adjacent to the lagoons.⁴⁹ In addition, sediment from the up-gradient watershed and the Bay has been deposited into the lagoon for decades, although there are indications that some areas of the lagoon were dredged many years ago.⁵⁰ Sediment deposition in the lagoons is reportedly non-uniform, with some areas of the lagoon bottom being hard and sandy, whereas at other locations several feet of organic mud have accumulated.⁵¹

Given the industrial uses that predominated in the Aquatic Park watershed in the past, and the historical lack of controls on chemical use and effluent discharge the lagoon, sediments could contain legacy contaminants such as PCBs and organochlorine pesticides (e.g., DDT), as well as sediment-adsorbed constituents of more recent concern, such as trace metals (e.g., copper, lead, zinc) and mercury.

⁴⁹ Haltiner, J., Hydrology and water quality: Berkeley Aquatic Park, A consulting report prepared by Philip Williams & Associates, Ltd. 21 pp, 1990.

⁵⁰ Haltiner, J., Hydrology and water quality: Berkeley Aquatic Park, A consulting report prepared by Philip Williams & Associates, Ltd. 21 pp, 1990.

⁵¹ Haltiner, J., Hydrology and water quality: Berkeley Aquatic Park, A consulting report prepared by Philip Williams & Associates, Ltd. 21 pp, 1990.

Sediment is a potential water quality concern during construction of the Preferred Project due to risks of soil erosion during excavation, redistribution and placement of fill, grading, soil stockpiling, and related activities. Even in taking standard precautions to minimize incidental introduction of soil into lagoon waters during implementation, there is a risk that contaminants within disturbed soil or sediments could affect lagoon water quality and/or be ingested by birds and aquatic biota. In addition, the APIP estimates that excavation of the proposed salt/brackish wetland alone would produce almost 6,300 cubic yards of soil⁵², of which approximately 560 cubic yards would be used for construction of the wetland berm that would surround the salt/brackish wetland restoration at the Rowing Club site, and the remainder available for use in other improvements, such as constructing a berm around the Radio Transmittal Building, potentially raising the elevation of Bird Island, and converting the abandoned parking lots into upland habitat by planting native plants.⁵³ If excavated soil or dewatered sediment containing contaminants is used for construction of upland improvements, there would be a risk that at some future date, contaminants could be eroded and/or remobilized into the lagoons, which could cause water quality objectives to be exceeded, which could, in turn, have an adverse effect on aquatic or avian species. This would be a *potentially significant* impact if measures are not in place to control effectively management sediment during construction.

Release of Pollutants from Equipment and Disturbance of Soil. As stated above, sediment is the pollutant of greatest potential concern during project construction. However, equipment operation and maintenance during the construction phase would also pose a short-term risk of releasing other pollutants, such as petroleum products (i.e., gasoline, diesel, kerosene, oil, and grease), hydrocarbons from asphalt paving, paints and solvents, detergents, nutrients (fertilizers), pesticides (i.e., insecticides, fungicides, herbicides, rodenticides), and litter, which could exceed water quality objectives. This would be a *potentially significant impact* if measures are not implemented to control pollutants.

Because construction would disturb an area exceeding 1 acre, the Preferred Project would be required to obtain coverage from the SWRCB under the NPDES Construction General Permit and prepare a SWPPP and a REAP. The City Municipal Code would also require preparation and submittal for review of a project Erosion and Sediment Control Plan (ESCP). The construction-phase controls for upland construction projects delineated and described in the SWPPP are identical to those that should be incorporated into the ESCP. These include components for erosion control, such as phasing of grading, limiting areas of disturbance, designation of restricted-entry zones, diversion of runoff or run-on away from disturbed areas, protective measures for sensitive areas, outlet protection, and provision for re-vegetation or mulching. The plans would also prescribe treatment measures to trap

⁵² Laurel Marcus & Associates et al. *Aquatic Park Improvement Program (APIP)*. Prepared by Laurel Marcus & Associates and Hydrologic Systems, Inc., City of Berkeley, Berkeley, California, 2008, Table 25.

⁵³ The results of limited soil sampling at the project site indicate low levels of arsenic, lead, and petroleum products are present at the four locations tested. The concentrations of contaminants at the four tested locations do not exceed hazardous waste criteria. (Atkins, Berkeley Aquatic Park Soil Sampling Results Memorandum, November 8, 2011).

sediment once it has been mobilized, at a scale and density appropriate to the size and slope of the catchment. For ground-disturbing construction activities necessary under Preferred Project, these measures might include inlet protection, straw bale barriers, straw mulching, straw wattles, and silt fencing. The SWPPP also details the housekeeping measures to be used for control of contaminants other than sediment during construction, as well as summarizing the proposed site planning measures and any treatment BMPs to be implemented for control of pollutants once the Preferred Project has been constructed. The City of Berkeley Public Works Department would be responsible for ensuring the SWPPP and ESCP requirements are implemented in accordance with the Municipal Code and for monitoring the effectiveness of the BMPs.

As noted in the Regulatory Setting, construction activities below the water line in the Bay will require application for a dredging permit through BCDC and the DMMO, a joint-powers organization comprised of BCDC, the RWQCB, the State Lands Commission, USEPA, and the San Francisco District office of the Corps. Dredging in the Bay and tidal lagoons will also require the City to apply separately to the Corps for a fill permit under CWA Section 404, and to RWQCB for water quality certification under Section 401 of the CWA. Typical BMPs for dredging include minimizing the area of disturbance and installing curtains and similar measures to prevent turbidity releases beyond the immediate excavation area during construction, and use of measures such as settling basins or Baker tanks during dredged-material dewatering operations to reduce sediment concentrations in decant prior to re-use, discharge, or disposal.

MITIGATION MEASURE. Implementation of Mitigation Measures HYD-1.1, HYD-1.2, HYD-1.3, and HYD-1.4 would reduce potential construction-related water quality impacts to a *less-than-significant* level.

HYD-1.1 Soil Management Plan. Prior to construction, soils and sediment at sites where soil or sediment could be disturbed by project activities or otherwise enter the environment shall be characterized using appropriate methodologies. As part of the application to the Bay Conservation and Development Commission (BCDC) and Dredged Material Management Office (DMMO) for construction of the tide tube headwall, the City shall include a Sampling and Analysis Plan (SAP) to evaluate suitability of dredge material for disposal or beneficial re-use according to protocols set forth in the U.S. Environmental Protection Agency (USEPA) and U.S. Army Corps of Engineers (Corps) Public Notice 01-01, the Inland Testing Manual (ITM).⁵⁴ The local guidance for applying the ITM in the San Francisco Bay region⁵⁵ states that sediment quality will be primarily assessed through physical and chemical analyses. The DMMO may also require water

⁵⁴ USEPA and Army Corps of Engineers, Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. – Testing Manual, EPA-823-B-98-004, February 1998, 176 p. + appendices.

⁵⁵ Dredged Material Management Office, Guidelines for Implementing the Inland Testing Manual in the San Francisco Bay Region, Sept. 2001, 18 p.

column toxicity tests, benthic toxicity tests and/or benthic bioaccumulation tests on pre-project, pre-excavation sediment samples. The local guidance states that the DMMO has considerable flexibility to approve on a case-by-case basis, as described below, testing methods which differ from those described in the ITM.

Applications to the Corps and RWQCB for dredge permits under Sections 401 and 404 of the CWA must include a work plan prepared by a qualified professional in accordance with the Multiple Lines of Evidence (MLOE) methodology set forth in the State Water Resources Control Board Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1 Sediment Quality (August 2009), or in accordance with a work plan prepared in accordance with USEPA Guidelines for Ecological Risk Assessment (EPA/630/F-95/002F). Prior to developing the work plan, the City shall consult with these two agencies and the DMMO, as to the appropriate sediment testing and evaluation protocol to address agency concerns regarding potential water quality and/or wetlands effects.

For both the DMMO and CWA Section 404/401 permits, based on the results of implementing the work plan, suitability of soils and sediments shall be compared with applicable sediment quality guidelines for beneficial re-use or disposal, such as the sediment quality objectives currently under development by the State Water Resources Control Board (State Water Resources Control Board Proposed Amendments to the Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1 Sediment Quality for the Protection of Fish and Wildlife January 11, 2011), or risk levels estimated in the ecological risk assessment. If it is determined that soil or sediment contains contaminants that would pose a water quality or biotic risk as a result of construction and operation, the affected soil/sediment shall not be re-used onsite and shall be removed and disposed of following applicable regulations. If it is determined soil/sediment can be beneficially reused on-site, the project sponsor shall implement Mitigation Measure HYD-1.4 (Construction Dredging) and HYD-4.1 (Sediment Deposition Monitoring and Dredging Plan) to ensure sediment quality is monitored over the long-term, and, corrective action is implemented if water quality impairment has been identified as a result of project operation.

HYD-1.2 Erosion and Sediment Control Plan (ESCP). Prior to construction, the City shall prepare and submit an ESCP for review and approval by the Public Works Department prior to issuance of a grading permit. The construction phase controls outlined in the ESCP would include components for erosion control, such as phasing of grading, limiting areas of disturbance, designation of restricted-entry zones, diversion of runoff or run-on away from disturbed areas, protective measures for sensitive areas, outlet protection, and provision for re-vegetation or mulching. The plans would also prescribe treatment measures to

trap sediment once it has been mobilized, at a scale and density appropriate to the size and slope of the catchment. For ground-disturbing construction activities necessary under Preferred Project, these measures might include inlet protection, straw bale barriers, straw mulching, straw wattles, and silt fencing. As described above, the components of the ESCP shall be identical to those included in the SWPPP, required by adherence to the NPDES Construction General Permit.

The project shall be required to fully implement the ESCP, and the City Public Works Department shall monitor these measures during project construction.

HYD-1.3 Stormwater Pollution Prevention Plan. Prior to construction, the City shall submit an NOI to SWRCB for coverage under the NPDES Construction General Permit and prepare and submit a SWPPP for review and approval by the Public Works Department (City Engineer) prior to issuance of a Final Map. The SWPPP shall incorporate the erosion and sediment control measures described in the project ESCP. BMPs such as sediment traps, storm drain inlet protection, vegetated swales, and media filtration systems, shall be designed based on specific criteria from recognized BMP design guidance manuals. The SWPPP shall also describe construction-phase housekeeping measures to be implemented, such as use of water-tight dumpsters to store solid wastes; storage of construction materials in designated areas, covered and with secondary containment, as appropriate; and practices to prevent pollutant discharge from vehicle and equipment fueling and cleaning.

The project shall be required to fully implement the SWPPP, and the City Public Works Department shall monitor these measures during project construction.

HYD-1.4 Construction Dredging. Prior to construction, the City shall apply to BCDC, the DMMO, the Army Corps and the Regional Board for permits to fill and dredge within the lagoons and at the tide tube outlet into the Bay. The applications must contain an Operation Plan for the project implementation stage that includes water quality protection to prevent exceedance of water quality objectives, including objectives for turbidity, total dissolved solids, dissolved oxygen, pH, oil and grease, and toxicity. In addition to specific BMPs stipulated by a dredging permit, the operation plan must provide for (a) use of machinery that has been power-washed and cleaned of all debris, oils, etc. prior to entry into the lagoons, (b) curtain-type floating barriers or similar means to prevent release of disturbed materials from the dredging zone and into lagoon areas not being dredged, (c) appropriately engineered dredged-sediment temporary dewatering facilities which prevent the release of dredged material effluent (decant water) collected during dewatering from entering the lagoons, Bay or City storm

drainage infrastructure, and (d) a plan to re-use or dispose of dredged sediments and water consistent with their quality.

HYD-2 Operation of the Preferred Project would not violate water quality standards or waste discharge requirements (i.e., as established by the San Francisco Bay RWQCB). (LTS)

Water Quality in the Lagoons. Based on the available data, existing water quality in the Aquatic Park lagoons is suboptimal for biological resources, at least seasonally. Temperature and dissolved oxygen levels exceed regulatory thresholds during portions of the summer or fall. Temperature, salinity and dissolved oxygen levels periodically fall outside the tolerance range of typical Central Bay fish species occupying the shallow, subtidal habitat making up most of the project site. The APIP and most previous studies have concluded that aquatic habitat as it relates to water quality could be improved by enhancing tidal exchange between the lagoons and the Bay, thereby decreasing residence time of surface waters within the lagoons, and improving internal circulation.

The Preferred Project consists of the following: (1) improved connections between the Strawberry and Potter Street storm drains and the lagoons; (2) an improved connection between the Model Yacht Basin and the Main Lagoon; (3) an improved connection from the Potter Street storm drain to the Radio Tower Pond; and (4) restoration of the northern tide tube in the Main Lagoon. Enlargement of the existing tide tubes beneath Interstate I-80, or addition of new tide tubes, were not considered due to the assumed high cost and required approval from Caltrans, which is outside the City's jurisdiction. Approvals from Caltrans cannot be assumed with any degree of certainty.

During non-storm conditions, these proposed drainage improvements would substantially increase the volume of Bay water flowing into the Main Lagoon, Model Yacht Basin, and Radio Tower Pond during tidal cycles and greatly enhance circulation and tidal exchange over existing conditions. During incoming tides, Bay water would enter the Main Lagoon through the existing tide tubes and the Strawberry storm drain connection; enter the Model Yacht Basin through the Potter storm drain connection; and enter the Radio Tower Pond through the existing tide tube and the new connection to the Potter storm drain. During outgoing tides, the water in the Main Lagoon would flow back to the Bay through these same connections.

The APIP modeling effort estimated that under existing non-storm conditions, approximately 22 acre-feet of water flows into and out of the roughly 240-acre-foot combined Main Lagoon-Model Yacht Basin system during an average tidal cycle.⁵⁶ Implementation of the Preferred Project would increase tidal exchange to approximately 115 acre-feet per tidal cycle,⁵⁷ a roughly 420 percent increase. Hydraulic residence time of

⁵⁶ Laurel Marcus & Associates et al. *Aquatic Park Improvement Program (APIP)*. Prepared by Laurel Marcus & Associates and Hydrologic Systems, Inc., City of Berkeley, Berkeley, California, 2008, Table 18.

⁵⁷ Laurel Marcus & Associates et al. *Aquatic Park Improvement Program (APIP)*. Prepared by Laurel Marcus & Associates and Hydrologic Systems, Inc., City of Berkeley, Berkeley, California, 2008, Table 21.

waters in the lagoons would be reduced from about 11 days under existing conditions, to slightly more than 2 days.

Although modeling of salinity, dissolved oxygen concentrations, and temperatures (or chemical constituents) was not conducted for the APIP or performed for this Draft EIR, it is reasonable to assume certain qualitative conclusions regarding the potential effect of the Preferred Project on these factors based solely on results of the circulation modeling, and the existing water quality data for Aquatic Park and the adjacent Bay. The substantial increase in the volume of Bay water circulating through the lagoons due to improved tidal exchange would result in conditions more closely resembling those in the Bay. As compared to existing conditions, water temperatures would be lower, dissolved oxygen concentrations would increase, and the persistence of salinity shifts due to storm runoff inflows would decrease with implementation of the Preferred Project. Improved internal circulation due to greater tidal exchange would reduce the occurrence and extent of seasonally-stagnant conditions in those portions of the lagoons most distant from inlets and outlets and overall, water quality would be improved.

During larger events, modeling estimates indicate (see discussion under Impact HYD-5, below) that moderate-sized events, which occur only infrequently, would result in flooding along the Strawberry and Potter Street storm drain lines in West Berkeley due to storm drain capacity limitations (refer to HYD-6 for discussion of impacts related to storm drain flooding). Currently, when runoff is unable to flow into Aquatic Park or discharge to the Bay, water backs up into the Strawberry and Potter storm drain lines. Once the water level in the pipes intersects the ground surface elevation, stormwater spills from drain inlets or manholes onto West Berkeley streets and flows overland to the lowest elevation, with much of it entering the Aquatic Park lagoons. With implementation of the Preferred Project, slide gates would block all storm runoff from entering the lagoons, causing pipes to back-up earlier during the event and spills to occur from smaller storms than at present. Water quality of the overland runoff would further degrade in transit toward the Bay as the larger volume of runoff (Table 4.3-7 and Table 4.3-9, below) mobilizes additional pollutants while flowing through the streets of West Berkeley neighborhoods and traversing the railroad easement prior to discharge to the lagoons. However, by definition, this situation would occur infrequently and the pollutant loads would be diluted due to the larger volume of overland runoff that would occur under the Preferred Project. Overland runoff would contain a lower concentration of pollutants during storm drain overflow events than compared to existing overland flow conditions, because during storm drain overflow events, the total volume of water entering the lagoons would be higher while the total amount of pollutants would remain constant. Conditions in the lagoons would also equilibrate faster with the central Bay following storms, improving conditions for local biota dependent on salinity levels more typical of estuarine/marine conditions than freshwater. Because the project would not violate water quality standards in the lagoons, the potential impact on water quality from implementation of the Preferred Project would be *less than significant*.

Water Quality in the Central Bay. Increased tidal circulation between the lagoons and the Bay would not be expected to affect Bay water quality during non-storm conditions. Under existing conditions, most runoff from the Aquatic Park watershed is routed into the central Bay, particularly from typical storms smaller than the 2-year event. Runoff from the Strawberry line enters the lagoons only at high flows and during higher tides. In the Potter line, only a limited fraction (approximately 10 percent) of the runoff from small storms enters the lagoons. During all storm events, initiation of stormwater flows would cause the slide gates on the Strawberry and Potter storm drain lines to close preventing stormwater from flowing into the lagoons. Therefore, stormwater which formerly would have entered the lagoons, would now be directed into the Bay.

Under the Preferred Project, all storm runoff through the Potter line would be blocked from entering the Aquatic Park lagoons by operation of the slide gates. Because the Potter line already discharges almost all runoff from small storms directly to the Bay, water quality standards in the Central Bay would not be violated. The slight increase in the frequency of pollutant discharges and associated mass loadings from preferential routing of stormwater away from the lagoons would have a *less-than-significant* impact on water quality in the Bay.

For larger events such as the 2-year storm, as explained above for lagoon water quality, overflows from the storm drain system in the watershed above the park would result in much of the stormwater runoff still being discharged to the Aquatic Park lagoons, albeit via a less-controlled, overland pathway, and perhaps carrying a higher pollutant load. However, by definition, this situation would occur infrequently and the slight increase in pollutant loads entering the Bay would still be diluted by a large volume of runoff. Therefore, during larger storm events, the Preferred Project would have a *less-than-significant* impact on water quality in the Bay.

Groundwater Quality Degradation. As described in Environmental Setting, above, the Berkeley coastal plain comprises a mix of alluvial fan and fluvial deposits with varying degree of connectivity to Bay waters, as shown by the seawater intrusion previously prevalent near Aquatic Park.⁵⁸ Under the Preferred Project, the proposed circulation improvement infrastructure would improve tidal exchange and speed re-establishment of baseline water quality in the lagoon following storm events. Implementation of the Preferred Project would increase salinity in the Aquatic Park lagoons to more closely resemble salinity levels in the central Bay. Bay waters already adjoin the Berkeley shoreline for much of its length. When there is no rainfall, salinities in the Aquatic Park lagoons likely mirror those in the Bay. The project is not expected to affect the aquifer(s) underlying West Berkeley. These aquifers are not currently a source of drinking water in the area and are not

⁵⁸ Norfleet Consultants, Groundwater study and water supply history of the East Bay Plain, Alameda and Contra Costa Counties, CA. Consulting report prepared for The Friends of the San Francisco Estuary. 125 pp, 1998.

designated for beneficial use in the Basin Plan.⁵⁹ Thus any increase in salinity in the aquifer resulting from implementation of the Preferred Project would be a *less-than-significant* impact.

HYD-3 The Preferred Project would not substantially deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted). (NI)

The Preferred Project would not result in groundwater extraction that could lead to depletion of existing groundwater supplies or interference with neighboring wells. There are no concerns related to groundwater extraction, because there are no existing wells on the project site, and none are proposed as part of the project.

With regard to potential impacts related to impervious surface cover and groundwater recharge, the Preferred Project would remove asphalt from abandoned parking areas and replant upland areas with vegetation, thereby decreasing impervious cover. These actions could increase recharge slightly, but only within the strip of land between the western shore of Aquatic Park and I-80, and not in the aquifer underlying the coastal plain. Implementation of the Preferred Project would have *no impact* on groundwater supplies or groundwater recharge.

HYD-4 The Preferred Project would alter the existing drainage pattern of the project site and surrounding area, and would increase the amount of circulation within the Aquatic Park lagoon system, which could result in erosion or siltation on- or off-site. (PS)

There are a number of ways in which the circulatory infrastructure improvements included as part of the Preferred Project could have a potentially significant effect on erosion, siltation or turbidity levels in the Aquatic Park lagoons:

- Increased water levels in the lagoons could exacerbate shoreline erosion.
- Greater inflow of sediment-laden Bay waters and improved circulation in the lagoon system could result in additional sediment deposition in the lagoons and increased need for maintenance dredging.
- Improved circulation through the lagoon system could disturb and mobilize sediments previously deposited under more quiescent conditions, thereby increasing turbidity.
- Increased overland stormwater runoff could cause soil erosion.

Potential impacts resulting from each of these conditions with the Preferred Project are evaluated below.

⁵⁹ Regional Water Quality Control Board, San Francisco Bay Region (Region 2), *Water Quality Control Plan (Basin Plan)*, December 2011.

Increased Shoreline Erosion Due to Higher Water Levels During Storms. The Preferred Project would alter the existing drainage pattern of the site, primarily through enhanced tidal exchange and through the inhibition of stormwater inflow to the lagoons from the Strawberry and Potter storm drain lines. However, in order to substantially increase shoreline erosion, the modifications would need to, at a minimum, elevate or cause to indirectly elevate (through enhanced wave action, etc.) moving water such that velocities overcame the resistive capabilities of existing shoreline protection. Potential impacts of higher water levels in the lagoons on flooding are discussed in detail under Impact HYD-5, below.

Based on modeling conducted for this study, implementation of the Preferred Project would still result in water levels in the Main Lagoon increasing slightly (0.15 foot) during the 2-year storm event (Table 4.3-7), despite closure of the slide gates. This 2-inch rise in water level would not have a significant impact on shoreline erosion, however, because the velocity of the moving water would not increase substantially, and any enhanced wind-driven waves would be focused on the east shoreline, which is already largely rock-lined. Furthermore, wave propagation from the Bay into the lagoons is not expected to change significantly with implementation of the project. Thus, the slightly higher water levels during storm periods would have a *less-than-significant* impact on shoreline erosion.

**Table 4.3-7
2-Year Storm Event Modeling Results**

| | Existing | Preferred Project |
|--|----------|-------------------|
| Main Lagoon, water surface elevation (ft) | -0.15 | 0.00 |
| Model Yacht Basin, water surface elevation (ft) | 3.13 | 0.00 |
| Total spill volume in developed areas of West Berkeley (acre-ft) | 60 | 64 |
| Total direct inflow volume to ML and MYB (acre-ft) | 136 | 94 |

Source: Balance Hydrologics Inc., 2012.

Increased Sediment Deposition and Need for Maintenance Dredging. Granular sediment, not fine sediment, is generally present in only low concentrations in urban stormwater due to the general absence of land development activities, such as grading and excavation, and a general disconnection between sediment supply and drainages within urbanized basins. Thus, the primary source of the sediment deposited in tidal lagoons surrounding San Francisco Bay is the Bay itself, as currents, waves and tidal fluctuations mobilize sediment from the bottom up into the water column. The suspended sediment then enters the quiet waters of the lagoons in tidal inflows and settles out, a process aided by the inadequate circulation typical of many Bay-margin lagoons.

The Preferred Project would increase inflows from the Bay to the lagoon by about 420 percent.⁶⁰ The mass of fine, or suspended sediment carried into the lagoons from the Bay by these inflows would increase proportionally, resulting in accelerated rates of fine sediment deposition within the lagoons. This increase in fine sediment deposition would have a *potentially significant* impact on water quality and, thus, could adversely affect aquatic habitat.

MITIGATION MEASURE. Implementation of Mitigation Measure HYD-4.1 would reduce potential impacts on sediment deposition and accumulation to a *less-than-significant* level.

HYD-4.1 Sediment Deposition Monitoring and Dredging Plan. As part of the application for dredging permits, the City shall include a sediment deposition monitoring and dredging plan (plan) to manage the lagoons consistently with the habitat and resource management goals set forth in the Project Description. Post-construction sediment deposition monitoring could be as simple as establishing several monitoring points where depth to sediment would be measured on a pre-determined schedule. The monitoring plan shall be consistent with the dredging management permit conditions resulting from implementation of Mitigation Measure HYD-1.4 (Construction Dredging). A performance standard/threshold for determining the need for further dredging shall be established as part of the plan. If further dredging is required, then the City shall first apply for coverage as a “small dredger” through the Small Dredger Programmatic Alternatives Analysis program⁶¹ specifically established by state and federal agencies to expedite permitting of routine, small maintenance dredging at waterfront sites in San Francisco Bay.

Increased Siltation or Turbidity Due to Mobilization of Previously Deposited Sediment. The improved circulation and tidal exchange during non-storm conditions that would result from implementation of the Preferred Project would disturb and redistribute sediment previously deposited on the bottom of the three lagoons. The resulting increase in turbidity would be a short-term effect that would progressively decrease as the lagoon adjusts to the new circulation patterns, and sediment is gradually exported back to the Bay, or redistributed across the lagoons. However, Bay waters are characterized by average annual suspended sediment concentrations (alternatively, measured as turbidity) of approximately 100 to 200 milligrams per liter.⁶² These are reasonably high values of suspended sediment

⁶⁰ Laurel Marcus & Associates et al. *Aquatic Park Improvement Program (APIP)*. Prepared by Laurel Marcus & Associates and Hydrologic Systems, Inc., City of Berkeley, Berkeley, California, 2008, Table 21.

⁶¹ U.S Army Corps of Engineers, U.S. Environmental Protection Agency, San Francisco Bay Conservation and Development Commission, San Francisco Bay Regional Water Quality Control Board, 2004, Small Dredger Programmatic Alternatives Analysis (SDPAA) for Disposal of Maintenance Dredged Material in the San Francisco Bay Region, Oct. 28, 2004, 14 p.

⁶² Schoellhamer, D.H., 2009, Suspended Sediment in the Bay: Past a Tipping Point. The Pulse of the Estuary. San Francisco Estuary Institute.

concentration. The temporary disturbance and redistribution of fine sediments stored in the lagoons would be a *less-than-significant* impact.

Increased Soil Erosion from Stormwater Runoff. Under the Preferred Project, the magnitude of overflows from the Strawberry and Potter lines during a 2-year storm event would increase by roughly 7 percent, from a combined total of 60 acre-feet to 64 acre-feet (Table 4.3-7). The additional runoff would flow overland through the streets of West Berkeley, with most of it entering the lagoon through surface discharge in a less-controlled fashion, just as it does under existing conditions. The slight increase in erosion from spills from the storm drain lines would be *less than significant* because the peak flow would only increase slightly and the increase in runoff to the lagoon would be dispersed across numerous locations.

HYD-5 *The Preferred Project could result in flooding on- or off-site. (PS)*

The Preferred Project would have a significant impact on flooding on and off the project site if the proposed circulation infrastructure improvements resulted in water surface elevations in the lagoons that are higher than the AIP-defined maximum water level of 1 foot below the lowest surveyed structure or improvements adjacent to the lagoons. Table 4.3-8 identifies the water level limits and allowable rise.

| Table 4.3-8 Aquatic Park Lagoon Water Level Limits | | | | | |
|---|---------------------------------|---|---------------------------|---------------------------------|-------------------|
| | Lowest Building Elevation | Recommended Minimum Building Buffer | Maximum Water Level | Existing High Water Level | Allowable Rise |
| | (feet) | | | | |
| Main Lagoon | 0.5 | 1.0 | -0.5 | -2.4 | 1.9 |
| Model Yacht Basin | 2.0 | 1.0 | 1.0 | -0.2 | 0.8 |
| Radio Tower Pond | -1.5 | 1.0 | -2.5 | -2.0 | -0.5 |

Source: Aquatic Park Improvement Program Technical Report, 2008, Table 6.

Note:

1. All elevations are in terms of the Berkeley datum.

Four scenarios were identified under which the Preferred Project, as currently configured, could potentially increase existing risks of flooding: flooding from tidal events, flooding from large storms, flooding from a series of storms, and flooding due to mechanical failure of the slide gates on the Strawberry line and/or Potter line. It is important to note that these scenarios are not mutually exclusive and multiple scenarios could occur simultaneously. Each of these topics is addressed in turn below. Flooding from potential increased storm drain overflows due to storm drainage capacity limitations are evaluated in Impact HYD-6, below.

Flooding from Tidal Events. The Preferred Project is designed to increase tidal variation within the lagoons and consequently increase maximum tidally driven water surface elevations within the lagoons. The proposed storm drain infrastructure connecting the lagoons to the Bay would be designed and sized so that the maximum high tide level, as defined by the highest modeled water surface elevation within an average tidal cycle, would not exceed the recommended maximum water levels. However, results of circulation modeling completed for the APIP indicate that the maximum water level attained (-1.1 feet) would be the same for all three lagoons. Thus, the goal would be achieved for the Main Lagoon and Model Yacht Basin, but not the Radio Tower Pond.⁶³ As a result, the Preferred Project would construct an earthen berm to protect the Radio Transmitter Building, and other structures and improvements surrounding Radio Tower Pond.

Furthermore, in designing the Preferred Project, tidal conditions that would produce higher water surface elevations than the mean high tide level were considered. APIP modeling results⁶⁴ indicate that over a roughly one-month long simulation period of relatively high tides (January 2008) the maximum water surface elevation for the Preferred Project in the Main Lagoon would reach an elevation of about -0.1 foot.⁶⁵ Although the APIP did not specifically model the Preferred Project, results for APIP analysis are applicable to the Preferred Project because the Preferred Project includes the same suite of infrastructure improvements as identified in APIP and the comparison is under non-storm conditions. These results indicate that the tidal levels in the Main Lagoon would extend beyond the recommended maximum level, but they would not reach the lowest-lying adjacent structure. However, because the risk of off-site flooding would increase with implementation of the Preferred Project, this would be a *potentially significant* impact.

MITIGATION MEASURE. Mitigation Measure HYD-5.1 requires that further analysis of other tidal events (e.g., the 100-year tide) across all of the basins be completed during project design. These data would be used to develop criteria for automated slide gate operation during high-tide events to prevent flooding, which would reduce this impact to a *less-than-significant* level.

HYD-5.1 Tidal Flooding Control. As the project develops further, additional modeling shall be completed to assess how other tidal events (e.g., the 100-year tide) and refinements to design features (i.e. expanded gate controls) would affect water surface elevations across all of the basins. The tidal modeling results will provide the City of Berkeley with operational-scale detail on how best to operate the slide gates to prevent flooding from high-tide events. The City shall operate the slide gates based on the results of this tidal modeling and shall monitor the

⁶³ Laurel Marcus & Associates et al. *Aquatic Park Improvement Program (APIP)*. Prepared by Laurel Marcus & Associates and Hydrologic Systems, Inc., City of Berkeley, Berkeley, California, 2008, Table 21.

⁶⁴ Laurel Marcus & Associates et al. *Aquatic Park Improvement Program (APIP)*. Prepared by Laurel Marcus & Associates and Hydrologic Systems, Inc., City of Berkeley, Berkeley, California, 2008, Figure 112.

⁶⁵ Laurel Marcus & Associates et al. *Aquatic Park Improvement Program (APIP)*. Prepared by Laurel Marcus & Associates and Hydrologic Systems, Inc., City of Berkeley, Berkeley, California, 2008, Figure 112.

automated system water surface elevation data to ensure operational parameters are being achieved to verify that the Preferred Project is being operated in a manner that does not worsen tidal flooding in Aquatic Park as a result of tidal conditions in the Bay.

Flooding from Large Storm Events. The Preferred Project includes connections to the Strawberry and Potter storm drain lines that, without control on inflow, would allow additional stormwater into the lagoons during a flood event, thereby increasing water levels relative to existing conditions. To address this issue, automated slide gates would be installed at both the Strawberry line and the Potter line storm drain connections. The gates would close before runoff could flow into the lagoons, and they would remain closed until water levels in the storm drains recedes.

Modeling of the Preferred Project and the associated gate operation criteria was developed to assess potential flooding impacts within the Main Lagoon and Model Yacht Basin and upstream along the Strawberry and Potter Street storm drain lines in West Berkeley for the 2-year and 100-year storm events. Modeling results for the 2-year event are shown in Table 4.3-7. Modeling results for the 100-year event are shown in Table 4.3-9. Key elements of the tables show:

- The modeled water surface elevations attained for Preferred Project during the specific design event, as compared to existing conditions;
- The estimated magnitude of spills at different locations in the upgradient storm drain systems, summed as the “Total spill volume” at the foot of each table; and
- The estimated inflows to the Main Lagoon and the Model Yacht Basin from the Potter and Strawberry lines, summed as the “total direct inflow volume” at the foot of each table.

**Table 4.3-9
100-Year Flood Event Modeling Results**

| | Existing | Preferred Project |
|---|----------|-------------------|
| Main Lagoon, water surface elevation (ft) | 4.65 | 3.55 |
| Model Yacht Basin, water surface elevation (ft) | 4.65 | 3.55 |
| Total spill volume in developed areas of West Berkeley (acre-ft) | 361 | 367 |
| Total direct inflow volume to Main Lagoon and Model Yacht Basin (acre-ft) | 499 | 365 |

Source: Balance Hydrologics Inc., 2012.

With the improved connectivity between the Main Lagoon and the Model Yacht Basin, the model results indicate that for the Preferred Project the maximum water surface elevation resulting from the 2-year storm event would increase relative to existing conditions within the Main Lagoon, but not to the level of the lowest-lying adjacent structure (Table 4.3-7).

The lowest elevation structure in the Main Lagoons is the Old Sailing Center at an elevation of +0.5 foot Berkeley Datum. Within the Model Yacht Basin, the maximum water surface elevation during the 2-year event is estimated to decrease by several feet relative to existing conditions. Water surface elevations resulting from the 100-year flood event were modeled to rise well above the lowest-lying structures and improvements adjacent to both the Main Lagoon and Model Yacht Basin, but to lower levels than under existing conditions (Table 4.3-9). Therefore, implementation of the Preferred Project would have a *less-than-significant* impact on flooding in the Aquatic Park lagoons from large storm events.

Flooding from a Series of Storms. A series of moderate-sized storm events could increase the risk of flooding structures and improvements immediately surrounding the basins due to the length of time required for draw-down and the return of water surface elevations to non-storm levels. Although not explicitly quantified in the hydraulic models conducted for the Preferred Project, it can be assumed that the Preferred Project would reduce the potential for this impact, as compared to existing conditions, due to the increased ability to block inflows to the Aquatic Park lagoons via the Strawberry and Potter Street storm drain connections and the increased capacity to rapidly flush the lagoons provided by the proposed circulation infrastructure improvements. Because the Preferred Project would not cause or exacerbate flooding from storms, this would be a *less-than-significant* impact. Further, the proposed improvements would increase the resilience of the project site under a scenario involving a series of moderate-sized storm events, which would be a benefit of the Preferred Project.

Flooding Due to Mechanical Failure of the Slide Gates. The existing structures connecting the Potter storm drain and the Model Yacht Basin, the Strawberry storm drain and the Main Lagoon, and the Main Lagoon and the Bay are passive, with no active components and little potential for failure during storm events. The Preferred Project would include remotely controlled slide gates in the pipes between the Strawberry storm drain line and the Main Lagoon, and between the Potter Street storm drain line and the Model Yacht Basin. Because these mechanical devices have moving parts, there is a risk that once installed they could fail to operate correctly. Several possible failure modes, with the likely consequence of the failure, are listed below.

- If either or both sets of slide gates fail to open during non-storm conditions, the magnitude of flows from the Bay to the lagoons through the storm drains would be reduced, thereby reducing flushing and circulation.
- If either or both sets of slide gates fail to close during the initiation phase of a storm event, stormwater that would otherwise flow to the Bay would enter the lagoons. The effect on water quality and water levels in the lagoons, and discharges from storm drain pipes upstream from the park, would depend on the size of the storm, tide levels, and the ability to discharge to the Bay.

However, as part of the Preferred Project, prior to approval of final project design, an operation, maintenance, and monitoring (OMM) plan would be required in conjunction with design of the gate controls. The OMM plan, which would be implemented by the City, would include measures for design of the slide gate mechanisms so that they are normally open and can be forced open if a failure in the operating mechanism occurs; placement of sensors which confirm the positions of the slide gates and communicate that information to a central control station; periodic, scheduled inspection, testing, and maintenance of the gates; and periodic, scheduled testing of the control system, communications, and functionality of the slide gate operating mechanisms. Therefore, the potential for flooding to occur as a result of mechanical failure of the slide gates would be a *less-than-significant* impact with implementation of measures specified in the required OMM plan.

HYD-6 The Preferred Project would have the potential to create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems. (SU)

When runoff from moderate-sized events (e.g., the 2-year storm) is unable to discharge to the Bay, water backs up into the Strawberry and Potter storm drain lines. The stormwater eventually spills from drain inlets or manholes and flows overland downhill through the streets of West Berkeley to the lowest elevation, with much of it entering the Aquatic Park lagoons. As shown in Table 4.3-7 for the 2-year event, and Table 4.3-9 for the 100-year event, modeling indicates that the Preferred Project, which would require that slide gates remain closed during all storm events, would increase flooding along the Strawberry and Potter Street storm drain lines in West Berkeley. Additionally, the overflows would occur from smaller storms than under existing conditions, begin earlier during the event, and extend higher into the Potter line and Strawberry line watersheds.

Within the Strawberry and Potter storm-drain lines, the model estimates that overflow volumes (spills) would increase from 60 acre-feet under existing conditions to 64 acre-feet during the 2-year flood event and from 361 acre-feet to 367 acre-feet during the 100-year flood event. For illustrative purposes, the 4-acre-foot (6.7 percent) increase in overflow volume predicted for the 2-year event would cover an area roughly the size of four football fields with water to a depth of one foot. However, in reality, the additional water would be dispersed in both time and space: the runoff would occur over a 24-hour period, and it would be spread out over portions of the two major subwatersheds. Thus, even at a point of concentration, such as San Pablo Avenue, and at the peak of runoff, the additional flow might only widen the flow by several feet, or deepen it by several inches. However, because implementation of the Preferred Project could result in flooding from storm drain overflows, this is considered a *potentially significant* impact.

MITIGATION MEASURE. The storm control measures proposed in the Potter watershed improvement projects identified in the City's WMP would be required to prevent an increase in storm drain overflows resulting from the Preferred Project (Mitigation Measure HYD-6.1). These improvements would include a new stormwater pipe east of the railroad tracks to intercept flow from West Berkeley replacing the current "techite line" in Aquatic

Park, and a new pressurized line under Aquatic Park and I-80 to bypass the Aquatic Park lagoons. Total improvement costs are estimated at approximately 17 million dollars. Such improvements would be cost-prohibitive for the Preferred Project, and there is no reasonable expectation that funding for the improvements could be obtained by the City on behalf of the APIP project. Because of the likely infeasibility of this mitigation measure, at least in the foreseeable future, the impact cannot be avoided or reduced to a level of insignificance, and the impact would remain significant and unavoidable.

HYD-6.1 Watershed Management Plan: Potter Watershed Improvements. Implement the Potter watershed improvement projects identified in the City's Watershed Management Plan.

HYD-7 The Preferred Project would not otherwise degrade water quality. (NI)

There are no additional potential impacts related to water quality beyond those discussed and addressed above under Impacts HYD-1, HYD-2, and HYD-4 above. Therefore, implementation of the Preferred Project would not otherwise degrade water quality, resulting in *no impact*.

HYD-8 The Preferred Project would not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary of Flood Insurance Rate Map or other flood hazard delineation map. (NI)

No additional housing or other habitable structures would be placed within a FEMA defined 100-year flood hazard area as part of the Preferred Project, resulting in *no impact*.

HYD-9 The Preferred Project would not place within a 100-year flood hazard area structures that would impede or redirect flood flows. (LTS)

No structures that would impede or redirect flood flows would be placed within the 100-year flood hazard area by the Preferred Project.

Under the Preferred Project, a channel would be cut through the berm separating the Model Yacht Basin from the Main Lagoon, changing the movement of storm flows through the basin and lagoon. In addition, a bioswale would be constructed immediately west of Bolivar Drive East, detaining and redirecting surface stormwater flows into the Main Lagoon. These actions would result in improvement in flood flow management, water quality in the lagoon and basin, and reduced contaminant loadings to the lagoon. In addition, the Preferred Project would place a minor amount of fill within Aquatic Park necessary for the berm surrounding the restored wetland and to raise the elevation of Bird Island. However, the amount of fill necessary for these project components would be negligible and would not result in displacement of significant volumes of flood waters. Therefore, the impact of the Preferred Project on flood flows would be *less than significant*, and no mitigation would be required.

HYD-10 The Preferred Project would not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. (NI)

Aquatic Park is within a dam failure inundation area, as determined by the State Office of Emergency Services (OES). In 1995, the Association of Bay Area Government summarized the location-specific information and maps compiled by OES to create a single Dam Failure Inundation Hazard Map for the entire Bay Area.⁶⁶ The map shows Aquatic Park to be at risk of inundation if there was a dam failure at the Berryman Reservoir on Euclid Avenue. However, after the reservoir was found to be seismically unsafe, it was drained in 2006 and free-standing water tanks were placed in the reservoir.⁶⁷ The owner, East Bay Municipal Utility District (EBMUD), is currently reconstructing the reservoir to significantly reduce the volume of water stored at that location. The Preferred Project would not alter the nature of this potential flooding impact. Furthermore, the risk of levee or dam failure is very small. Therefore, the Preferred Project would not expose people or structures to hazards related to flooding as a result of dam failure, resulting in *no impact*.

HYD-11 The Preferred Project could expose people or structures to substantial risk of inundation by sea level rise. (PS)

Sea level rise is expected to increase water levels in the Main Lagoon, Model Yacht Basin, Radio Tower Pond, and the Bay. This will reduce the hydraulic performance of the storm drains by decreasing potential stormwater conveyance to the lagoons and the Bay, and would also inhibit tidal exchange, further increasing the time the lagoons take to drain or flush.

The Preferred Project would modify the response of the existing stormwater drainage system to high water levels and high runoff flows and change the circulation and flushing of the lagoon system. Installation of slide gates in the connection between the Strawberry storm drain and the lagoon, and between the Potter Street storm drain and the Model Yacht Basin, would provide the ability to control and modify inflows and outflows and actively manage water levels in the lagoon system. The net impact of sea level rise on the Preferred Project would depend on how the slide gates are operated for purposes of controlling the inflow and outflow of tidal water between the lagoons and the Bay. For instance, the slide gates could be used under the Preferred Project to reduce impacts of higher water levels by establishing criteria to close the gates when the increasingly high tides are predicted to attain or exceed a certain elevation. While this would reduce circulation and flushing of the basin and lagoon as compared to existing conditions, tidal exchange would still exceed existing levels. Operation of the slide gates under this management regime would reduce the potential for inundation of the lagoons and basin due to sea level rise.

⁶⁶ Association of Bay Area Governments, Dam Failure Inundation Hazard Map, Compiled from information obtained from the State Office of Emergency Services, 1995. <http://quake.abag.ca.gov/dam-failure/>

⁶⁷ City of Berkeley, 2004. Ibid.

However, under the Preferred Project, the new slide gates installed on the Strawberry line and the Potter line connections would be closed during all storm events. As described above (Impact HYD-5), this approach to stormwater management would reduce water levels in the lagoons and the risk of flooding from this source as compared to existing conditions, but would also increase the volume of stormwater spilling from manholes and flowing overland into the lagoons when water levels in the Strawberry and Potter Street storm drains exceed ground elevation. Because sea level rise would further increase the frequency and magnitude of such stormwater overflows that could result in flooding, this would be a *potentially significant* impact.

MITIGATION MEASURE. Implementation of Mitigation Measure HYD-5.1, identified above, would ensure that the Preferred Project is designed to reduce impacts associated with inundation due to sea level rise to a *less-than-significant* level.

HYD-11.1 Implement Mitigation Measure 5.1 (Tidal Flooding Control).

HYD-12 *The Preferred Project would not expose people or structures to substantial risk of inundation seiche, tsunami or mudflow. (LTS)*

Inundation from Seiche. A seiche is an oscillation wave caused by earthquake accelerations. Seiches primarily occur in confined or mostly confined bodies of water. This behavior would not be affected by changes in the hydraulic connections to the Bay and storm drains since seiche action is rapid and short-lived. The Preferred Project would have a *less-than-significant* impact on the response to a seiche within the lagoon system.

Inundation from Tsunami. The project area is within a tsunami hazard zone. Changes in the storm drain connections and water surface elevations in the lagoons and/or storm drains from the Preferred Project would be relatively trivial in comparison to anticipated flows from a tsunami and would not substantially increase the extent or magnitude of inundation. Therefore, impacts would be *less than significant*. The larger stormwater pipes, restored tide tubes, and better intra-basin connections included in the Preferred Project would increase tidal flushing and reduce hydraulic residence times following inundation from a tsunami. These improvements could speed post-tsunami recession of high-water levels in Aquatic Park and help return surface water elevations in the lagoon system to normal conditions more rapidly depending on operation of the slide gates on the Strawberry and Potter Street storm drain connection, which would be a benefit of the Preferred Project.

Inundation from Mudflows. The area immediately up-gradient from Aquatic Park is gently sloped and not under threat of mudflows. This would not change under Preferred Project. Therefore, implementation of this alternative would have *no impact* on the potential for inundation from mudflows in the project area.

Cumulative Evaluation

The geographic context for evaluation of cumulative hydrology and water quality impacts is the area immediately upgradient of the project site. As such, the cumulative project considered in this Draft EIR is the full buildout of the West Berkeley Plan, which encompasses the project vicinity, east of the project site. The Initial Study conducted for the West Berkeley Project determined that implementation of the West Berkeley Project would have less-than-significant impacts related to hydrology and water quality. New development proposed under the West Berkeley Project would be subject to the C.3 Provisions contained in the City's MRP. Adherence to the C.3 Provisions would ensure that the West Berkeley Project does not contribute significant amounts of polluted runoff to Aquatic Park. The Supplemental EIR for the West Berkeley Project determined that adherence to all applicable requirements associated with the protection of water quality in stormwater runoff would reduce potentially impacts to a less-than-significant level. As described in the Environmental Analysis, above, with the exception of stormwater overflows upgradient of the project site, the Preferred Project would also result in less-than-significant hydrology and water quality impacts. For those impacts that have been identified as potentially significant, their overall contribution to cumulative impacts would not be considerable with implementation of mitigation measures. With the exception of flooding due to storm drain capacity limitations, the Preferred Project would have a less-than-significant cumulative impact on hydrology and water quality. As presented in HYD-6, implementation of the Preferred Project would result in a significant and unavoidable impact related to flooding from storm drain overflows. Because the area affected by this adverse impact encompasses the geographic context for this cumulative impact, the project's contribution to this cumulative impact to flooding from storm drain overflows is also considered significant and unavoidable.

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Section 5 Alternatives

5.1 INTRODUCTION

The California Environmental Quality Act (CEQA) (Public Resources Code, Sections 21000 et seq.) and the CEQA Guidelines (California Code of Regulations, Title 14, Sections 15000 et seq.) require that an Environmental Impact Report (EIR) “describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives” (CEQA Guidelines Section 15126.6(a)). If mitigation measures or a feasible project alternative that would meet most of the basic project objectives would substantially lessen the significant environmental effects of a proposed project, then the lead agency should not approve the proposed project unless it determines that specific technological, economic, social, or other considerations make the mitigation measures and the project alternative infeasible (PRC Section 21002, CEQA Guidelines Section 15091(a)(3)). The EIR must also identify alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and should briefly explain the reasons underlying the lead agency’s determination (CEQA Guidelines Section 15126.6(c)).

One of the alternatives that must be analyzed is the “No Project” Alternative. The “No Project” analysis must discuss the existing conditions at the time the Notice of Preparation (NOP) is published, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved and development continued to occur in accordance with existing plans and consistent with available infrastructure and community services (CEQA Guidelines Section 15126.6(e)(2)). Therefore, pursuant with the CEQA Guidelines, this section discusses and analyzes a No Project alternative.

In addition to the No Project alternative, this section provides two additional alternatives (No SW-Sealed alternative and No Additional SW alternative) to the Preferred Project and analyzes the impacts of each. This section later provides a description of the alternatives and compares the significant impacts of the alternatives to the significant environmental impacts of the Preferred Project.

5.2 DESCRIPTION OF ALTERNATIVES CONSIDERED

As stated above, the alternatives to a proposed project are meant to feasibly attain most of the basic project objectives while avoiding or substantially lessening its significant impacts. With one exception, all of the Preferred Project’s biological resources and hydrology/water quality significant impacts can be reduced to less-than-significant levels with implementation of mitigation measures. The one remaining significant and unavoidable project-specific impact from the Preferred Project would be flooding from storm drain overflows (Impact HYD-6). When water is unable to discharge to the Bay, water backs up into the Strawberry and Potter Street storm drain lines, eventually spilling from drain inlets or manholes. As part of the Preferred Project, stormwater would not be allowed to drain to the

Aquatic Park lagoons from the Strawberry and Potter Street storm drain lines. During larger storm events (2-year event and greater), this would create stormwater loads upgradient of the project site that would exceed the capacity of the storm drain system by prohibiting discharge into Aquatic Park, causing an increase in upstream flooding, including onto West Berkeley streets.

Alternative 1: No Stormwater – Sealed Manholes (No SW-Sealed)

The No SW-Sealed alternative is identical to the Preferred Project with respect to the proposed circulatory infrastructure improvements to the Aquatic Park lagoons, storm drain modifications, and habitat improvements as the Preferred Project. However, the No SW-Sealed alternative would seal the manholes along the Potter Street storm drain line in order to prevent increased flooding in the lower portion of the Aquatic Park watershed.

Alternative 2: No Additional Stormwater (No Additional SW)

The APIP Technical Report recommended Alternative 4B as the preferred alternative for the hydrologic component of the APIP. For the purposes of this Draft EIR, Alternative 4B is designated as No Additional SW. The No Additional SW alternative would include the same circulatory infrastructure improvements to the Aquatic Park lagoons, storm drain modifications, and habitat improvements as the Preferred Project; however, this alternative proposes a different stormwater management regime than the Preferred Project or the No SW-Sealed alternative. Under the No Additional SW alternative, the slide gates on the storm drains would remain open during dry periods to facilitate tidal exchange, and would close upon initiation of flow in the upstream storm drains. However, the gates to the lagoons could re-open during storm events equal to or larger than the 2-year storm that would threaten to cause increased flooding upstream.

In addition, the No Additional SW alternative would include an adaptive management component that would allow for flexibility in stormwater management strategies as ecosystem monitoring and performance are evaluated. The following adaptive management strategies would be included in the No Additional SW alternative:

1. Prior to implementing the water circulation improvements, a water and sediment quality characterization study of the Main Lagoon would be completed. This study will establish the baseline conditions in the system and allow long-term comparison with post-project conditions. Sediment quality characterization involves collecting sediment samples from a variety of locations in each lagoon. The samples would be analyzed for sediment grain size (sand vs. mud), bulk chemistry (presence and concentrations of contaminants), and bioassays (acute toxicity of sediment and/or elutriate to typical marine invertebrate test organisms). Because most persistent urban contaminants, such as heavy metals, PCBs, DDT, and oil and gas (PAHs), are transported into tidal areas on clay particles, nearshore estuarine areas have greater contaminant levels in sediments rather than the water column. The sediment characterization study would provide the baseline for comparison with future tests and a determination of the efficacy of the water circulation improvements.

2. Water quality monitoring of the lagoon system would be performed using continuous monitoring devices to track basic indicators - temperature, dissolved oxygen, salinity, and pH. In addition, a number of other parameters should be measured less frequently including nutrients (nitrate, ammonia, total phosphorus), organophosphate pesticides, total dissolved solids (TDS), total suspended sediment (TSS), a range of polycyclic aromatic hydrocarbons (PAHs), PCBs, metals and trace elements, coliform, and chlorophyll to evaluate algal growth. Water quality monitoring should be done to characterize summer/fall conditions under the current system once the Preferred Project's hydrologic component is implemented.
3. Baseline and on-going monitoring would also include characterization of the benthic invertebrates that inhabit various areas of the lagoons. The diversity and abundance of invertebrates provides an indicator for the ecological health of the lagoon system. Worms, mollusks and crustaceans would be expected to live in the intertidal and subtidal mud layers. The diversity, abundance and distribution of these animals would be characterized as a baseline condition, and then at annual intervals as part of the lagoon-monitoring program.
4. The Preferred Project's water circulation improvements and their predicted outcomes are based on a detailed computer model of the watershed and lagoon system. The model has field data to describe the system and simulate the complex of fresh and tidal water flows into and out of the system. However, no model perfectly simulates real world conditions. Therefore, once the hydrologic component of the Preferred Project is completed, monitoring of water levels and water quality is recommended. The system would be built to allow slide gates to be installed on the various inlet/outlet connections to change tidal flow direction or levels if needed.
5. Detailed pre-project and post-project monitoring would be used to evaluate the effects on the aquatic habitat of various settings of the gates on the tide connections. The monitoring results for salinity at surface and at depth and other water quality parameters, along with the extent and abundance of the invertebrate communities in the lagoons, would indicate the overall health of the aquatic habitat and the need for management changes. An independent Technical Advisory Committee composed of concerned scientists and agencies would be charged with evaluating this monitoring data to determine if the water gate settings for the lagoons should be changed.
6. For the upland habitat areas, adaptive management practices would be used in revising revegetation and replanting practices and/or species. Monitoring of planting success would be performed, recording growth/density measurements along with location, irrigation volumes, wind exposure, sun/shade conditions, and noting whether protective hardware and/or weed mat was used. This information can be used to guide replanting efforts and choice of species as the revegetation project progresses.
7. A final level of adaptive management would review the success of first step efforts to control human and unleashed dog disturbance to habitat areas. The habitat areas should be photographed regularly and inspected for dog tracks. If signs and periodic enforcement do not decrease disturbance from unleashed dogs, the next step of fencing the areas may need to be implemented. The success of efforts to reduce homeless encampments and any other activities

that are used to reduce habitat disturbance should be reviewed no less frequently than yearly and revised as needed to increase effectiveness.

Alternative 3: No Project Alternative

Under the No Project Alternative, Aquatic Park would remain unchanged. The existing infrastructure that allows inter-lagoon circulation, exchange with the Bay, and inflow and outflow through the Potter Street and Strawberry storm drain lines would remain as-is. In addition, no wetland or habitat restoration would take place under this alternative. The Aquatic Park lagoons would continue to function as they do under existing conditions.

5.3 ATTAINMENT OF PROJECT OBJECTIVES

As described in Section 3, Project Description, the City has identified the following project objectives that are relevant to the physical impacts considered in this document:

1. Improve water quality and habitat at Aquatic Park while maintaining the balance of recreational uses and habitat areas.
2. Eliminate or reduce inflow of stormwater to Aquatic Park lagoon system to the extent feasible consistent with objective 1, above.
3. Improve park aesthetics.
4. Maximize eligibility of funding by outside sources.
5. Comply with all current codes and standards, regulations, orders, and policies.
6. Avoid increases in upstream flooding.

An evaluation of how each alternative meets or does not meet the basic project objectives is provided below. Pursuant to CEQA Guidelines Section 15126.6(a), the following analysis describes the extent to which the three project alternatives meet or do not meet the City's objectives as described in Section 3, Project Description, and listed above.

Alternative 1: No SW-Sealed

The No SW-Sealed alternative would be identical to the Preferred Project in terms of water infrastructure improvements, habitat and recreation improvements, and on-going monitoring and maintenance. However, because this alternative would seal manholes along the lower Potter line storm drain system, storm drain overflows would occur higher in the Potter Street and Ashby Street corridors, further above the railroad crossing, thereby conflicting with Objective 6.

Alternative 2: No Additional SW

The No Additional SW alternative would include all of the physical improvements identified for the Preferred Project and would differ only in the management of stormwater flows into the Aquatic Park

lagoons. As described above, the No Additional SW alternative would continue the current management practices and would allow stormwater to enter the lagoons during the 2-year storm event and larger events. This alternative would include an adaptive management component that would allow for flexibility in stormwater management strategies as ecosystem monitoring and performance are evaluated. Therefore, the No Additional SW alternative would meet all of the project objectives, but would not completely eliminate the inflow of stormwater to the Aquatic Park lagoon system from the Potter Street and Strawberry storm drains, and some upstream flooding from storm drain overflows would still occur.

Alternative 3: No Project Alternative

The No Project Alternative would not achieve the basic project objectives. The No Project Alternative would not meet the primary objectives of improving tidal exchange, water circulation, and water quality in the Aquatic Park lagoon system. Aquatic Park would continue to receive first-flush stormwater inflows carrying higher concentrations of pollutants from the upper watershed, which has an adverse effect on water quality in the lagoon system. Furthermore, the wetland and habitat restoration components of the Preferred Project would not be implemented.

5.4 IMPACT ASSESSMENT

This section evaluates whether the alternatives would reduce the significant impacts of the Preferred Project to less-than-significant levels and/or would generate impacts other than those identified for the Preferred Project. Recommended mitigation measures for each alternative are provided in the analysis below.

The comparative analysis of potential effects on biological resources for the No SW-Sealed and the No Additional SW alternatives is presented in summary form because the impacts would generally be limited to construction, the elements of which would be identical to the Preferred Project. For hydrology and water quality, there are differences in water quality and flooding/drainage impacts. Therefore, the impact analyses are presented in detail. For each hydrology/water quality impact, a separate impact numbering scheme is used to distinguish the impacts from the Preferred Project and between the two alternatives. For example, A1-HYD-1 corresponds to Preferred Project Impact HYD-1 for the No SW-Sealed alternative (Alternative 1).

Alternative 1: No SW-Sealed

As described above, the No SW-Sealed alternative would include all the project components identified for the Preferred Project, and would also include sealed manhole covers along the Potter Street storm drain line. Similar to the Preferred Project, it was determined that the No SW-Sealed alternative would have a less-than-significant impact with regard to aesthetics, agriculture and forestry resources, air quality, cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation/traffic, and utilities and service systems.

Hydrology and Water Quality

A1-HYD-1 Construction of the No SW-Sealed alternative could potentially violate water quality standards or waste discharge requirements (i.e., as established by the San Francisco Bay office of the Water Board or RWQCB). (PS)

The potential construction-related impacts of the No SW-Sealed alternative would be the same as for the Preferred Project. Short-term construction-phase impacts of would pose a **potentially significant** threat to water quality. Implementation of Mitigation Measures HYD-1.1 through HYD-1.4 from Section 4.3, Hydrology and Water Quality, would reduce potential short-term construction-phase impacts to water quality to a **less-than-significant** level.

A1-HYD-2 Operation of the No SW-Sealed alternative would not violate water quality standards or waste discharge requirements (i.e., as established by the San Francisco Bay office of the Water Board or RWQCB). (PS)

Water Quality in the Lagoon. The potential impact of this alternative would be the same as for the Preferred Project, except that sealing manholes on the lower Potter line storm drain system would displace the overflows and spills from storm drains and manholes to higher elevations in the Potter Street and Ashby Street neighborhoods, further above the railroad tracks. Thus, overland flows would travel longer distances through West Berkeley and potentially mobilize slightly more pollutants before flowing into the Aquatic Park lagoons. However, this situation would occur less frequently than the Preferred Project because sealing the manholes would force the water to rise uphill before it spilled from the manholes. If the manholes were sealed (i.e., the Preferred Project), it would take a slightly larger and slightly less frequent storm event before overflows occurred. The pollutant loads would still be diluted by a large volume of overland flow runoff; therefore, the potential impact to lagoon water quality would be **less than significant**, similar to the Preferred Project.

Water Quality in the Central Bay. The potential water quality impact of this alternative would be the same as for the Preferred Project. The slight increase in the frequency and mass loadings of pollutants in runoff from small storms discharged to the Bay would be a **less-than-significant** impact. Overland runoff from overflows associated with larger events, such as the 2-year storm, would occur only infrequently and the slight increase in pollutant loads entering the Bay would still be diluted by a large volume of runoff. This would also be a **less-than-significant** impact, similar to the Preferred Project.

Groundwater Impacts. Potential impacts on groundwater quality would be the same as described for the Preferred Project. Any increase in salinity would be less-than-significant. Thus, any increase in salinity in the aquifer resulting from implementation of the No SW-Sealed alternative would be **less than significant**.

A1-HYD-3 The No SW-Sealed alternative would not substantially deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted). (NI)

The No SW-Sealed alternative would not result in groundwater extraction that could lead to depletion of existing groundwater supplies or interference with neighboring wells. There are no concerns related to groundwater extraction as there are no existing wells on the project site, and none are proposed as part of this alternative. With regard to potential impacts related to impervious surface cover and groundwater recharge, the No SW-Sealed alternative would remove asphalt from abandoned parking areas and replant upland areas with vegetation, thereby decreasing impervious cover. These actions could increase recharge slightly, but only within the strip of land between the western shore of Aquatic Park and I-80, and not in the aquifer underlying the coastal plain. Implementation of the No SW-Sealed alternative would have **no impact** on groundwater supplies or groundwater recharge, identical to the Preferred Project.

A1-HYD-4 The No SW-Sealed alternative would alter the existing drainage pattern of the project site and surrounding area, and would increase the amount of circulation within the Aquatic Park lagoon system, which could result in substantial erosion or siltation on- or off-site. (PS)

Increased Shoreline Erosion Due to Higher Water Levels During Storms. Modeling results estimate that implementation of the No SW-Sealed alternative would result in lower maximum water surface elevations in the Main Lagoon and the Model Yacht Basin during a 2-year storm event, as compared to existing conditions (Table 5-1). Shoreline erosion would not increase because the banks of the Main Lagoon are protected by the rocky shoreline, and the Model Yacht Basin is lined by rock terraces. Therefore, the No SW-Sealed alternative would have **no impact** on increased shoreline erosion, and the impact on shoreline erosion would be avoided, when compared to the Preferred Project.

Table 5-1
Comparison of Project Alternatives for the 2-Year Storm Event Modeling Results

| | Existing | Preferred Project | No Additional SW | No SW-Sealed |
|--|----------|-------------------|------------------|--------------|
| Main Lagoon, water surface elevation (ft) | -0.15 | 0.00 | 0.32 | -0.33 |
| Model Yacht Basin, water surface elevation (ft) | 3.13 | 0.00 | 0.32 | -0.33 |
| Total spill volume in developed areas (acre-ft) | 60 | 64 | 60 | 89 |
| Total direct inflow volume to ML and MYB (acre-ft) | 136 | 94 | 115 | 32 |

Source: Balance Hydrologics, 2012.

Increased Sediment Deposition and Need for Maintenance Dredging. No SW-Sealed alternative would have the same effect on sediment deposition as described for the Preferred

Project in Section 4.3, Hydrology and Water Quality, of this Draft EIR. Therefore, implementation of this alternative would have a *potentially significant* impact on sediment deposition. Implementation of Mitigation Measure HYD-4.1 would reduce potential impacts on sediment deposition and accumulation to a *less-than-significant* level, similar to the Preferred Project.

Increased Siltation or Turbidity Due to Mobilization of Previously Deposited Sediment. Similar to the Preferred Project, the temporary disturbance and redistribution of fine sediments stored in the lagoons would be a *less-than-significant* impact.

Increased Soil Erosion from Stormwater Runoff. Although the No SW-Sealed alternative would prevent overflows from the lower portions of the Potter line by sealing manhole covers, overflows higher in the Potter and Ashby Street corridors, in the more developed portions of West Berkeley would increase by 57 percent, from 60 acre-feet under existing conditions to 94 acre-feet (Table 4.3-7). The increased potential for soil erosion as these uncontrolled flows are discharged to the lagoon in a concentrated fashion without energy dissipation would be a *potentially significant* impact. The No SW-Sealed alternative would result in a greater potential for increased soil erosion from stormwater runoff than the Preferred Project. Additional mitigation beyond that required for the Preferred Project would be required. Implementation of Mitigation Measure A1-HYD-4.1 would reduce potential impacts on erosion of the lagoon banks to a *less-than-significant* level.

A1-HYD-4.1 Overland Stormwater Controls. Should the City chose to implement the No SW-Sealed option, energy dissipation (e.g., riprap or other hardened ground) shall be installed at locations bordering the Aquatic Park where overland flows currently enter the lagoons following spills from the upgradient storm drain systems.

A1-HYD-5 The No SW-Sealed alternative could result in flooding on- or off-site. (PS)

Flooding from Tidal events. The risk of off-site flooding under this alternative would be identical to that described for the Preferred Project in Section 4.3, Hydrology and Water Quality. Therefore, implementation of the No SW-Sealed alternative would have a *potentially significant* impact related to flooding from tidal events. Implementation of Mitigation Measure HYD-5.1 as described in Section 4.3, Hydrology and Water Quality, would ensure that further analysis of other tidal events (e.g., the 100-year tide) across all of the basins be completed during project design to identify operating parameters for the slide gates, which would reduce this potentially significant impact to a *less-than-significant* level.

\Flooding from Large Storm Events. Modeling results indicate that implementation of the No SW-Sealed alternative would result in a decrease in maximum water surface elevations resulting from the 2- and 100-year flood events within the Main Lagoon and Model Yacht Basin, relative to existing conditions (see Table 5-1 and Table 5-2). Therefore, the No SW-

Sealed alternative would have a *less-than-significant impact* on flooding in Aquatic Park from large storm events, similar to the Preferred Project.

Table 5-2
Comparison of Project Alternatives for 100-Year Flood Event Modeling Results

| | Existing | Preferred Project | No Additional SW | No SW-Sealed |
|--|----------|-------------------|------------------|--------------|
| Main Lagoon Water Surface Elevation (ft) | 4.65 | 3.55 | 4.65 | 1.49 |
| Model Yacht Basin Water Surface Elevation (ft) | 4.65 | 3.55 | 4.65 | 1.49 |
| Total Spill Volume in Developed Acres (af) | 361 | 367 | 361 | 478 |
| Total Direct Inflow Volume to Main Lagoon and Model Yacht Basin (af) | 499 | 365 | 497 | 104 |

Source: Balance, 2012.

Flooding from a Series of Storms. The No SW-Sealed alternative would include the same circulation infrastructure improvements and slide gates as the Preferred Project. Therefore, the No SW-Sealed alternative would provide the same ability to block inflows to the Aquatic Park lagoons and the same increased capacity to rapidly flush the lagoons (outflow) after a storm event as described for the Preferred Project, and, like the Preferred Project, impacts would be *less than significant*. As with the Preferred Project, the No SW-Sealed alternative would also result in a benefit regarding the increased resilience of Aquatic Park to withstand flooding from multiple storm events.

Flooding due to Mechanical Failure of the Slide Gates. The No SW-Sealed alternative would include the same remotely-controlled slide gates in the Strawberry and Potter Street storm drain lines as the Preferred Project. As such, this alternative could result in flooding related to mechanical failure of the slide gates, as described for the Preferred Project. Identical to the Preferred Project, an operation, maintenance, and monitoring (OMM) plan would be prepared in conjunction with design of the gate controls. The OMM plan would include measures for design of the slide gate mechanisms so that they are normally open and can be forced open if a failure in the operating mechanism occurs; placement of sensors which confirm the positions of the slide gates and communicate that information to a central control station; periodic, scheduled inspection, testing, and maintenance of the gates; and periodic, scheduled testing of the control system, communications, and functionality of the slide gate operating mechanisms. Therefore, the potential for flooding to occur as a result of mechanical failure of the slide gates would be *less than significant*.

A1-HYD-6 The No SW-Sealed alternative would have the potential to create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. (SU)

Flooding from Storm Drain Overflows. The No SW-Sealed alternative would eliminate the inflow of stormwater to the Aquatic Park lagoons during all storm events. When runoff from moderate-sized events is unable to discharge to the Bay, water backs up into the Strawberry and Potter Street storm drain lines, eventually spilling from drain inlets or manholes. Sealing manholes would prevent overflows from the downstream portions of the Potter line, but would increase overflows from the storm drains higher in the Potter Street and Ashby Street corridors, in more developed portions of West Berkeley. Modeled overflow volumes would increase from 60 acre-feet under existing conditions to 89 acre-feet (29 acre-feet) during the 2-year flood event, and from 361 acre-feet to 478 acre-feet (117 acre-feet) during the 100-year flood event. The No SW-Sealed alternative would result in a greater increase in storm drain overflow than the Preferred Project. These potential increases in flooding would be *significant and unavoidable* given the fact that the required improvements to avoid it would be cost prohibitive, as discussed in Section 4.3, Hydrology and Water Quality.

A1-HYD-7 The No SW-Sealed alternative would not otherwise degrade water quality. (NI)

There are no additional potential impacts related to water quality beyond those discussed and addressed above under Impacts A1-HYD-1 and A1-HYD-4 above. Therefore, implementation of the No SW-Sealed alternative would not otherwise degrade water quality, resulting in *no impact*, identical to the Preferred Project.

A1-HYD-8 The No SW-Sealed alternative would not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary of Flood Insurance Rate Map or other flood hazard delineation map. (NI)

No additional housing or other habitable structures would be placed within a FEMA defined 100-year flood hazard area as part of the No SW-Sealed alternative, resulting in *no impact*, identical to the Preferred Project.

A1-HYD-9 The No SW-Sealed alternative would not place within a 100-year flood hazard area structures that would impede or redirect flood flows. (LTS)

No structures that would impede or redirect flood flows would be placed within the 100-year flood hazard area by the No SW-Sealed alternative.

Under the No SW-Sealed alternative, a channel would be cut through the berm separating the Model Yacht Basin from the Main Lagoon, changing the movement of storm flows through the basin and lagoon. In addition, a bioswale would be constructed immediately west of Bolivar Drive East, detaining and redirecting surface stormwater flows into the Main Lagoon. These actions would result in improvement in flood flow management, water

quality in the lagoon and basin, and reduced contaminant loadings to the lagoon. The impact of any of this alternative on flood flows would be *less than significant* and no mitigation would be required, identical to the Preferred Project.

Because this alternative would place fill in a Special Flood Hazard Area – a floodplain – the City of Berkeley Floodplain Administrator (Public Works Director) would need to determine whether CLOMR or CLOMR-F permits will need to be processed through the City of Berkeley and FEMA. The No SW-Sealed alternative would also be subject to Berkeley Municipal Code, Title 17- Water and Sewers, Chapter 12- Flood Zone Development.

AI-HYD-10 The No SW-Sealed alternative would not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. (NI)

Aquatic Park is within a dam failure inundation area, as determined by the State Office of Emergency Services (OES). The No SW-Sealed alternative would not alter the nature of this potential flooding impact. Therefore, identical to the Preferred Project, this alternative would not expose people or structures to hazards related to flooding as a result of dam failure, resulting in *no impact*.

AI-HYD-11 The No SW-Sealed alternative could expose people or structures to substantial risk of inundation by sea level rise. (PS)

Impact HYD-5 discusses the potential impacts of this alternative on flooding, which are the same as for the Preferred Project except that sealing manholes in the lower portions of the Potter line storm drain systems would result in the spills and overflows occurring higher in the Potter Street and Ashby Street corridors. As described for the Preferred Project in Section 4.3, Hydrology and Water Quality, sea level rise would further increase the frequency and magnitude of such stormwater overflows, resulting in a *potentially significant* impact that could be greater in magnitude than the Preferred Project because overflows would be higher in the Potter and Ashby streets corridors. Implementation of Mitigation Measure HYD-5.1 would ensure that this alternative is designed to reduce impacts associated with tidal inundation to a *less-than-significant* level.

AI-HYD-12 The No SW-Sealed alternative would not expose people or structures to substantial risk of inundation by seiche, tsunami or mudflow. (LTS)

Inundation from Seiche. Identical to the Preferred Project described in Section 4.3, Hydrology and Water Quality, the No SW-Sealed alternative would have a *less-than-significant* impact on the response to a seiche within the lagoon system.

Inundation from Tsunami. Identical to the Preferred Project described in Section 4.3, Hydrology and Water Quality, the net impact of the No SW-Sealed alternative on tsunami-caused flooding would be *less-than-significant*.

Inundation from Mudflows. The area immediately up-gradient from Aquatic Park is gently sloped and not under threat of mudflows. This would not change under the No SW-Sealed alternative. Therefore, implementation of this alternative would have *no impact* on the potential for inundation from mudflows in the project area, identical to the Preferred Project.

Biological Resources

Implementation of the No SW-Sealed alternative would have similar effects on biological resources as those described for the Preferred Project. As described in Section 4.2, Biological Resources, database queries and site visits did not identify any special status or listed plant or animal species. Therefore, the No SW-Sealed alternative would not have a substantial adverse impact on such species. The No SW-Sealed alternative would include the same storm drain infrastructure modifications, tide tube improvements, and habitat restoration efforts as evaluated for the Preferred Project. Therefore, the No SW-Sealed alternative would result in the same construction-related impacts to riparian habitat, aquatic habitat, wetlands, and other sensitive natural areas at the project site, similar to the Preferred Project, and mitigation measures identified for the Preferred Project to reduce potentially significant impacts would also be required (Mitigation Measures BR-3.1, BR-6.1, BR-6.2, and BR-7.1).

The No SW-Sealed alternative would limit all storm drain outflows into the project site lagoons and would seal the manholes upgradient of the project site. The manholes would be left unsealed under the Preferred Project. By sealing manholes, stormwater would overflow further upgradient in the storm drain system. Thus, overland flows would travel longer distances and potentially mobilize slightly more pollutants before flowing into the Aquatic Park lagoons. However, this situation would occur less frequently than the Preferred Project (for the reasons explained in Impact A1-HYD-2), and the pollutant loads would still be diluted by a large volume of overland flow runoff. Therefore, the No SW-Sealed alternative could result in an overall benefit to water quality, that, in turn, would lead to improved aquatic habitat, similar to the Preferred Project.

The No SW-Sealed alternative would adhere to the City Municipal Code provisions governing the protection of the project site as important wildlife habitat and the removal of trees and shrubs. The No SW-Sealed alternative would also comply with the City's Live Oak Protection Ordinance, similar to the Preferred Project. Therefore, the No SW-Sealed alternative would not conflict with any local policies or ordinances protecting biological resources, resulting in a *less-than-significant* impact, similar to the Preferred Project.

Alternative 2: No Additional SW

As described above, the No Additional SW alternative would include all the project components identified for the Preferred Project (infrastructure and habitat improvements), but would involve a different stormwater management regime. In comparison with the Preferred Project and No SW-Sealed (Alternative 1), which propose to inhibit all stormwater from entering the Aquatic Park lagoons via the Strawberry and Potter Street storm drains, the No Additional SW alternative would result in no additional stormwater (over existing conditions) from entering the lagoons. Similar to the Preferred

Project, it was determined that the No Additional SW alternative would have a less-than-significant impact with regard to aesthetics, agriculture and forestry resources, air quality, cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation/traffic, and utilities and service systems.

Hydrology and Water Quality

A2-HYD-1 Construction of the No Additional SW alternative could potentially violate water quality standards or waste discharge requirements (i.e., as established by the San Francisco Bay office of the Water Board or RWQCB). (PS)

The potential construction-related impacts of the No Additional Stormwater alternative would be the same as for the Preferred Project. Short-term construction-phase impacts could pose a **potentially significant** threat to water quality. Implementation of Mitigation Measures HYD-1.1 through HYD-1.4 from Section 4.3, Hydrology and Water Quality, would reduce potential short-term construction-phase impacts to water quality to a **less-than-significant** level.

A2-HYD-2 Operation of the No Additional SW alternative would not violate water quality standards or waste discharge requirements (i.e., as established by the San Francisco Bay office of the Water Board or RWQCB). (LTS)

Water Quality in the Lagoon. Implementation of the No Additional SW alternative would include the same primary drainage components as described for the Preferred Project in Section 4.3, Hydrology and Water Quality. However, under this alternative, the slide gates would be opened during the large storms (2-year to 100-year storms) to allow runoff to enter the lagoons, as opposed to the Preferred Project and No SW-Sealed in which the slide gates would remain closed during all storm events. This would reduce the amount of stormwater entering the Aquatic Park lagoons from storm drains during small storms, and would increase the amount of runoff directed into the lagoons from larger events, such as the 2-year storm. On balance (by design), the same amount of runoff would enter the lagoons after implementation of the No Additional SW alternative as enters them now. However, the timing of runoff entry would change such that pollutants would be at maximum dilution, which would reduce the impact on water quality in the lagoon as compared to existing conditions and the Preferred Project and No SW-Sealed alternative. Like the Preferred Project, impacts would be **less than significant**, but this alternative could result in an overall benefit to water quality in the Aquatic Park lagoons compared to the Preferred Project.

Water Quality in the Central Bay. During larger storm events the tidal gates would re-open to allow a portion of peak flows to enter the basin and lagoon, resulting in an increase in the amount of runoff directed into the Aquatic Park lagoons, as compared to the Preferred Project and No SW-Sealed alternative. Further, because the No Additional SW

alternative would allow peak flows to enter the project site lagoons, this alternative would reduce the amount of polluted runoff entering the Bay during larger storm events compared to the Preferred Project and No SW-Sealed alternative. Therefore, during larger storm events, the No Additional SW alternative would have ***no impact*** on water quality in the Bay, which could be a benefit of this alternative.

Groundwater Impacts. Potential impacts on groundwater quality are the same as for the previous Preferred Project and No SW-Sealed alternative. Specifically, any increase in aquifer salinity resulting from implementation of the No Additional SW alternative would be ***less than significant***, similar to the Preferred Project.

A2-HYD-3 The No Additional SW alternative would not substantially deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted). (NI)

Similar to the Preferred Project, the No Additional SW alternative would have ***no impact*** on groundwater supplies and groundwater recharge.

A2-HYD-4 The No Additional SW alternative would alter the existing drainage pattern of the project site and surrounding area, and would increase the amount of circulation within the Aquatic Park lagoon system, which could result in substantial erosion or siltation on- or off-site. (PS)

Increased Shoreline Erosion Due to Higher Water Levels During Storms. Modeling results estimate that implementation of the No Additional SW option would result in an approximate 0.5-foot increase in the maximum water surface elevations in the Main Lagoon resulting from the 2-year storm event (Table 5-1). Similar to the Preferred Project, it is unlikely that the minor increase in wave heights that would result from the No Additional SW alternative would substantially increase shoreline erosion. Therefore, the No Additional SW alternative would have a ***less-than-significant*** impact on shoreline erosion.

Increased Sediment Deposition and Need for Maintenance Dredging. Similar to the previous the Preferred Project, implementation of the No Additional SW alternative would have a potentially significant impact on sediment deposition. However, the No Additional SW alternative would adhere to the same mitigation measure as the Preferred Project (Mitigation Measure HYD-4.1). Therefore, impacts related to increased sediment deposition would be reduced to a ***less-than-significant*** level.

Increased Siltation or Turbidity Due to Mobilization of Previously Deposited Sediment. The temporary disturbance and redistribution of fine sediments stored in the lagoons would be a ***less-than-significant*** impact, similar to the Preferred Project.

Increased Soil Erosion from Stormwater Runoff. Under the No Additional SW alternative, the magnitude of overflows from the Strawberry and Potter storm drain systems would remain unchanged from the existing condition (Table 5-2). Therefore, implementation of the No Additional SW alternative would have *no impact* on increased soil erosion from stormwater runoff.

A2-HYD-5 The No Additional SW alternative could substantially alter the existing drainage pattern of the site or area, including through the alteration of the Aquatic Park lagoon system circulation infrastructure and stormwater conveyance system, which would result in flooding on- or off-site. (PS)

Flooding from Tidal Events. The risk of flooding from tidal events under this alternative would be identical to that presented for the Preferred Project and the No SW-Sealed alternative. Therefore, implementation of the No Additional SW alternative would have a potentially significant impact related to flooding from tidal events. However, the No Additional SW alternative would adhere to the same mitigation measure as identified for the Preferred Project (Mitigation Measure HYD-5.1). Therefore, impacts related to flooding from tidal events would be reduced to a *less-than-significant* level.

Flooding from Large Storms. Modeling results indicate that the maximum water surface elevation resulting from the 2-year storm event would increase relative to existing conditions within the Main Lagoon, but not to the level of the lowest-lying adjacent structure (see Table 5-1). Within the Model Yacht Basin, the maximum water surface elevation during the 2-year storm is estimated to decrease relative to existing conditions. Maximum water surface elevations resulting from the 100-year flood event would remain unchanged from levels under existing conditions (see Table 5-2). Therefore, the No Additional SW alternative would have *no impact* related to flooding from large storm events.

Flooding from a Series of Storms. The No Additional SW alternative would include the same circulation infrastructure improvements and slide gates as the Preferred Project. Therefore, the No SW-Sealed alternative would provide the same ability to block inflows to the Aquatic Park lagoons and increased capacity to rapidly flush the lagoons after a storm event as described for the Preferred Project, and impacts would be *less than significant*. As with the Preferred Project, the No SW-Sealed alternative would also result in a benefit regarding the increased resilience of Aquatic Park to withstand flooding from multiple storm events.

Flooding due to Mechanical Failure of the Slide Gates. The No Additional SW alternative would result in the same less-than-significant impact as described for the Preferred Project, assuming operation of an OMM plan.

A2-HYD-6 The No Additional SW alternative would have the potential to create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems. (SU)

The No Additional SW alternative would limit the inflow of stormwater to the Aquatic Park lagoons, although to a lesser degree than under the Preferred Project and No SW-Sealed alternative. Under existing conditions, when runoff from moderate-sized events is unable to discharge to the Bay, water backs up into the Strawberry and Potter Street storm drain lines, eventually spilling from drain inlets or manholes into the streets of West Berkeley.

Under the No Additional SW alternative, the slide gates would be opened to allow runoff from large events to enter the lagoons. Within the Strawberry and Potter storm drain lines, estimated overflow volumes during the 2-year flood event were the same as under existing conditions. For the 100-year flood event, the estimated total overflow volume from the system also remained unchanged relative to existing conditions. When these flows are partitioned, however, model results indicate that the overflow volume from the Potter line would be slightly less than under existing conditions, while the overflow volume from the Strawberry line would increase slightly – by 1 acre-foot or less. While the volume of storm drain overflows into the streets of West Berkeley would be less (Table 5-1 and Table 5-2) under the No Additional SW alternative, as compared to the Preferred Project or the No SW-Sealed alternative, flooding from storm drain overflows would still occur, which would be a potentially significant impact.

Implementation of the Potter watershed component of the WMP¹ would mitigate this impact. However, given the uncertainty of implementation of necessary mitigation due to the prohibitive cost (as described in Impact HYD-6), this potential increase in flooding would be *significant and unavoidable*. It should be noted, however, the magnitude of the predicted increase in overflow volume for the Strawberry line during the 2-year storm is relatively small. If the No Additional SW alternative is approved, minor modifications to this alternative that would likely eliminate this increase could be pursued during final design. Examples that were not considered during the CEQA assessment include slight changes in pipe size or slide gate configuration, or using different assumptions regarding slide gate timing and functioning.

A2-HYD-7 The No Additional SW alternative would not otherwise degrade water quality. (NI)

There are no additional potential impacts related to water quality beyond those discussed and addressed above under Impacts A2-HYD-1 and A2-HYD-4, above. Therefore,

¹ Capital improvement recommendations for Potter watershed include an innovative combination of conventional measures (such as pipe enlargement) and “green” right-of-way retrofits to treat, slow, and potentially re-use stormwater. Such “green infrastructure” measures could include right-of-way landscaping, underground temporary storage piping, permeable surfacing, and trash capture devices. (City of Berkeley, Watershed Management Plan, October 2011)

implementation of the No Additional SW alternative would not otherwise degrade water quality, resulting in ***no impact***, identical to the Preferred Project.

A2-HYD-8 The No Additional SW alternative would not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary of Flood Insurance Rate Map or other flood hazard delineation map. (NI)

No additional housing or other habitable structures would be placed within a FEMA defined 100-year flood hazard area as part of the No Additional SW alternative, resulting in ***no impact***, identical to the Preferred Project.

A2-HYD-9 The No Additional SW alternative would not place within a 100-year flood hazard area structures that would impede or redirect flood flows. (LTS)

The No Additional SW alternative would result in the same ***less-than-significant*** impact as the Preferred Project because it would involve the same improvements.

A2-HYD-10 The No Additional SW alternative would not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. (NI)

Identical to the Preferred Project, the No Additional SW alternative would have ***no impact*** with regard to exposure of people or structures to significant risk from failure of a dam or levee.

A2-HYD-11 The No Additional SW alternative could expose people or structures to substantial risk of inundation by sea level rise. (PS)

Modeling results indicate that the No Additional SW alternative would increase maximum water surface elevations resulting from the 2-year storm event relative to existing conditions within the Main Lagoon, but not to the level of the lowest-lying adjacent structure, and predicted water surface elevations from the 100-year storm would decrease. Sea level rise would further increase high-water levels experienced during storm periods, resulting in a potentially significant impact, as would occur with the Preferred Project. The No Additional SW alternative would adhere to the same mitigation measure as identified for the Preferred Project (Mitigation Measure HYD-5.1), thereby reducing potential impacts to a ***less-than-significant*** level.

A2-HYD-12 The No Additional SW alternative would not expose people or structures to substantial risk of inundation by seiche, tsunami, or mudflow. (LTS)

Inundation from Seiche. Identical to the Preferred Project, the No Additional SW alternative would have a ***less-than-significant*** impact on the response to a seiche within the lagoon system.

Inundation from Tsunami. The net impact of the No Additional SW alternative on tsunami-caused flooding would be *less-than-significant*, identical to the Preferred Project.

Inundation from Mudflows. Identical to the Preferred Project, the No Additional SW alternative would have *no impact* related to inundation from mudflows.

Biological Resources

Implementation of the No Additional SW alternative would have similar effects on biological resources as those described for the Preferred Project. As described in Section 4.2, Biological Resources, database queries and site visits did not identify any special status or listed plant or animal species. Therefore, the No Additional SW alternative would not have a substantial adverse impact on such species. The No Additional SW alternative would include the same storm drain infrastructure modifications, tide tube improvements, and habitat restoration efforts as evaluated for the Preferred Project. Therefore, the No Additional SW alternative would result in the same construction-related impacts to riparian habitat, aquatic habitat, wetlands, and other sensitive natural areas at the project site, similar to the Preferred Project, and mitigation measures identified for the Preferred Project to reduce potentially significant impacts would also be required (Mitigation Measures BR-3.1, BR-6.1, BR-6.2, and BR-7.1).

The primary difference between the No Additional SW alternative and the Preferred Project is related to stormwater management. Unlike the Preferred Project, which would limit all storm drain outflows to the lagoons, the No Additional SW alternative would continue the current management practices and would allow stormwater to enter during larger storm events (2-year event and greater). On balance (by design), the same amount of runoff would enter the lagoons after implementation of the No Additional SW alternative as enters them now. However, in the No Additional SW alternative, the timing of runoff entry would change such that pollutants would be at maximum dilution, which would reduce the impact on water quality in the lagoon as compared to existing conditions. Therefore, the No Additional SW alternative could result in a benefit to water quality, that, in turn, would lead to improved aquatic habitat, similar to the Preferred Project.

The No Additional SW alternative would adhere to the City Municipal Code provisions governing the protection of the project site as important wildlife habitat and the removal of trees and shrubs. The No Additional SW alternative would also comply with the City's Live Oak Protection Ordinance, similar to the Preferred Project. Therefore, the No Additional SW alternative would not conflict with any local policies or ordinances protecting biological resources, resulting in a *less-than-significant* impact, similar to the Preferred Project.

Alternative 3: No Project

Hydrology and Water Quality

The No Project alternative would not modify the existing Potter Street and Strawberry storm drain connections to the project site, nor would the tide tubes connecting the project site lagoons to the Bay be restored. As such, the volume of stormwater entering the lagoons from the Potter Street and

Strawberry storm drains would remain unchanged, and there would be no impact related to storm drain overflow and flooding upgradient of the project site, which would occur with the Preferred Project. Further, the tidal exchange between the Bay and the lagoons would not change and there would be no impact related to erosion and/or flooding associated with an increased tidal range in the lagoons. Additionally, because construction would not occur under the No Project alternative, there would be no impact related to short-term erosion or sedimentation associated with ground-disturbing activities. High water temperatures and low dissolved oxygen levels in the lagoons would not be improved under the No Project Alternative since this alternative would not restore the tide tubes or improve connection between the lagoons. Thus, the beneficial impacts identified under the Preferred Project would not occur with the No Project Alternative.

The No Project Alternative would not result in placement of housing or structures in the 100-year floodplain and would not expose additional people to hazards associated with potential sea-level rise. Similar to the Preferred Project, the No Project Alternative would not increase the amount of impervious surface area at the project site and would not rely on groundwater as a water source. Therefore, the No Project Alternative would have no impact on groundwater supplies and recharge. The No Project Alternative would not expose people or structures to hazards associated with tsunamis, seiche, or dam failure, resulting in no impact similar to the Preferred Project.

Biological Resources

The No Project alternative would not involve construction of any kind. The project site would remain unchanged from existing conditions. As such, improvements to aquatic and terrestrial habitat, such as water quality improvement and invasive species removal, would not be implemented. The project site lagoons would continue to have water temperatures and dissolved oxygen levels that currently exist and stress aquatic species. Because this alternative would not involve any construction activities, there would be no construction-related impacts on habitat or species.. Further, because the No Project Alternative would not involve habitat restoration, this alternative would have not have the beneficial impacts on riparian habitat, wetlands or sensitive natural communities as would occur with the Preferred Project. Similar to the project, under the No Project Alternative, Aquatic Park site would continue to function as wildlife habitat and a public recreation area and, therefore, would not conflict with General Plan policies focused on the preservation of such uses at Aquatic Park. However, because the No Project alternative would not involve habitat restoration, this alternative would have not have the beneficial effect on riparian habitat, wetlands or sensitive natural communities as would occur with the Preferred Project.

5.5 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Sections 21002 and 21081 of CEQA requires lead agencies to adopt feasible mitigation measures or feasible environmentally superior alternatives in order to substantially lessen or avoid otherwise significant adverse environmental effects, unless specific social or other conditions make such mitigation measures or alternatives infeasible. CEQA also requires that an environmentally superior alternative be identified among the alternatives analyzed. In general, the environmentally superior

alternative is the project that avoids or substantially lessens some or all of the significant and unavoidable impacts of the Preferred Project (CEQA Guidelines Section 15126.6).

Table 5-3 summarizes the comparative environmental impacts of the project alternatives, based on the analyses provided in Section 5.4, Impact Assessment, above.

| Table 5-3 Comparison of Impacts Among Project Alternatives | | | | |
|---|--|---|--|--|
| Environmental Issue | No SW- Unsealed (Preferred Project) | No SW- Sealed (Alternative 1) | No Additional SW (Alternative 2) | No Project Alternative (Alternative 3) |
| Hydrology and Water Quality | | | | |
| Water Quality (Construction) | LTS/MM | = | = | - |
| Water Quality (Operation) | LTS | = | - | + |
| Groundwater Supplies and Recharge | NI | = | = | - |
| Shoreline Erosion | LTS/MM | - | - | - |
| Sediment Deposition/Dredging | LTS/MM | = | = | - |
| Siltation/Turbidity | LTS | = | = | - |
| Soil Erosion/Stormwater | LTS/MM | + | - | - |
| On-or Off-Site Flooding | LTS/MM | = | = | - |
| Storm Drain Capacity/Flooding | SU/MM | + | - | - |
| Housing in 100-Year Floodplain | NI | = | = | = |
| Structures/Fill in 100-Year Floodplain | LTS | = | = | - |
| Dam Inundation | NI | = | = | = |
| Sea Level Rise | LTS/MM | + | = | - |
| Seiche and Tsunami | LTS | = | = | = |
| Mudflow | NI | = | = | = |
| Biological Resources | | | | |
| Special-Status Species/Habitat (Construction) | LTS/MM | = | = | - |
| Special-Status Species/Habitat (Operation) | LTS | = | = | - |
| Wetland/Aquatic Habitat (Construction) | LTS/MM | = | = | - |
| Wetland/Aquatic Habitat (Operation) | LTS | = | = | + |
| Wildlife Corridors or Nursery Sites | LTS | = | = | - |
| Nesting Birds | LTS/MM | = | = | - |
| Monarch Butterflies | LTS/MM | = | = | - |
| Conflicts with Local Policies or Ordinances | LTS | = | = | - |
| NI = No Impact | | = impacts would be identical to the project | | |
| LTS = Less-than-Significant | | + impacts would be more severe than the project | | |
| LTS/MM = Less-than-Significant with Mitigation | | - impacts would be less than the project | | |
| SU = Significant Unavoidable even with mitigation | | | | |
| Source: Atkins, 2012. | | | | |

On the basis of comparing the extent to which the alternatives would reduce or avoid the significant impacts of the Preferred Project, the No Project alternative would be environmentally superior because

it would avoid the potentially significant construction-related impacts that could affect habitat or species, and it would avoid significant water quality and flooding impacts, when compared to the Preferred Project. However, the No Project Alternative would not achieve the primary objectives of improving tidal exchange, water circulation, and water quality in the Aquatic Park lagoon system.

In accordance with the CEQA Guidelines, if a No Project alternative is identified as the environmentally superior alternative, an environmentally superior alternative must then be selected from the remaining alternatives. Based on a review of the remaining project alternatives, the No Additional SW alternative (Alternative 2) would be the environmentally superior alternative.

The No Additional SW alternative would involve the same hydrologic and habitat improvement components as the Preferred Project and the No SW-Sealed alternative. However, the No Additional SW alternative would implement a different stormwater management regime than the Preferred Project or the No SW-Sealed alternative. Under the No Additional SW alternative, a portion of peak stormwater flows from larger storm events (2-year storm event and greater) would be directed into the Aquatic Park lagoons, thereby decreasing the capacity load on storm drains upgradient of the project site. As such, the No Additional SW alternative would result in less storm drain overflow and reduced flooding in West Berkeley neighborhoods compared to the Preferred Project (4 acre-feet less spillage for the 2-year event [see Table 5-1] and 6 acre-feet for the 100-year event [see Table 5-2] and substantially less than the No SW-Sealed alternative (29 acre-feet less spillage for the 2-year event [see Table 5-1] and 117 acre-feet less spillage for the 100-year event [see Table 5-2]). This reduction in storm drain overflow would also result in smaller volumes of overland stormwater runoff and lower, pollutant loads, entering the lagoon system. Therefore, the No Additional SW alternative would result in better water quality and aquatic habitat in the Aquatic Park lagoons compared to the Preferred Project, No SW-Sealed alternative, and No Project alternative. While there would be a reduction in storm drain overflows, it still would not be enough to reduce the significant and unavoidable storm drain overflow impact.

Further, the No Additional SW alternative, as well as the Preferred Project and No SW-Sealed alternative, would result in beneficial impacts associated with restoration of salt/brackish wetlands, invasive species removal, revegetation of the shoreline and upland areas, and potential restoration of Bird Island that would not occur with the Preferred Alternative.

5.6 ALTERNATIVES CONSIDERED BUT REJECTED FROM ANALYSIS IN THE EIR

In addition to the 13 other scenarios evaluated in the APIP (refer to Section 1, Summary, for a description of the process that resulted in the Preferred Project evaluated in this Draft EIR), the City also considered an additional alternative that was focused on the idea of increasing circulation in the Main Lagoon by allowing for more stormwater than currently enters Aquatic Park. This would achieve some of the project objectives including minimizing upstream flooding as well as improving circulation. However, City staff ultimately determined that this alternative could worsen water quality in the Main Lagoon substantially enough that the concept was rejected by the City for analysis in the EIR.

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Section 6

Other CEQA Considerations

6.1 IMPACTS FOUND TO BE LESS THAN SIGNIFICANT

Section 15128 of the CEQA Guidelines states:

“The EIR shall contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and therefore not discussed in detail in the EIR.”

Potential environmental impacts resulting from the project are limited to biological resources and hydrology/water quality. Implementation of the Preferred Project would not result in significant environmental impacts for the remaining CEQA topics. The following provides a brief summary of each topic that is not discussed in detail in this Draft EIR.

Aesthetics

The project would not have a substantial adverse effect on a scenic vista; substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway; substantially degrade the existing visual character or quality of the site and its surroundings; or create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

The 102-acre Aquatic Park comprises three man-made lagoons, associated freshwater, tidal, and brackish water wetlands and adjoining uplands at the foot of the Berkeley hills on the margins of central San Francisco Bay. As described in Section 3, Project Description, the Preferred Project would include modifications to the existing storm drain network and improvements to the inter-lagoon circulatory system and tidal exchange tubes. The Preferred Project would also create a salt/brackish wetland at the Rowing Club site and would remove invasive non-native plants along the shoreline areas of the Aquatic Park lagoons. Once invasive plants have been eradicated, these shoreline areas would be revegetated with high marsh/transition zone native plants. Additionally, restoration work would be completed for the upland areas of Aquatic Park. These project components would primarily occur below ground-surface and would not affect the aesthetic character of project site. Project components involving wetland creation, habitat restoration, and revegetation would improve the visual character of Aquatic Park. No significant land use changes or construction of new structures would occur and the project would not result in impacts any scenic vistas or introduce new sources of light or glare. There are no State scenic highways within the vicinity of the project site.¹ As such, the Preferred Project would have no impact on visual resources.

¹ California Department of Transportation, California Scenic Highway Mapping System. Website: http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm, accessed January 24, 2012.

Agriculture and Forestry Resources

The project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use; conflict with existing zoning for agricultural use, or a Williamson Act contract; conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g)); result in the loss of forest land or conversion of forest land to non-forest use; involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.

The project site is in a highly developed, urbanized area and does not involve any changes to land use or construction of new structures. The Farmland Mapping and Monitoring Program (FMMP) designates the site as Urban and Built-Up Land.² The project site is not zoned for agricultural use, forest land, or timberland.³ The Environmental Management Element of the Berkeley General Plan states, “Agriculture in Berkeley is limited to personal and community gardens.”⁴ The project site could not likely support the conditions that would qualify it for forest land or timber land as described under Public Resources Code 12220 and 4256, respectively. Therefore, the Preferred Project would have no impact on agriculture or forestry resources.

Air Quality

The project would not conflict with or obstruct implementation of the applicable air quality plan; violate any air quality standard or contribute substantially to an existing or projected air quality violation; result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors); expose sensitive receptors to substantial pollutant concentrations; or create objectionable odors affecting a substantial number of people.

The Preferred Project would not increase the population in the City or result in new vehicle trips. No land use changes or new major construction are associated with implementation of the Preferred Project. The Bay Area Air Quality Management District (BAAQMD) guidelines were reviewed to determine whether the Preferred Project could result in potentially significant air quality impacts. The Preferred Project is substantially below the BAAQMD screening level size and does not require quantification of criteria air pollutants.⁵ The Preferred Project would not include a new odor source.

² California Department of Conservation Division of Land Resource Protection, Farmland Mapping and Monitoring Program. <ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2010/ala10.pdf>. Accessed January 24, 2012.

³ City of Berkeley, City of Berkeley zoning map. <http://www.ci.berkeley.ca.us/ContentDisplay.aspx?id=6474>. Accessed January 24, 2012.

⁴ City of Berkeley, Environmental Management Element. <http://www.ci.berkeley.ca.us/contentdisplay.aspx?id=478>. Accessed January 24, 2012.

⁵ BAAQMD, *BAAQMD CEQA Guidelines*, May 2011. Table 3-1, page 3-3.

Implementation of the Preferred Project would require the use of construction equipment, which would result in the short-term emission of air pollutants from equipment exhaust and dust caused by construction activities. In accordance with the BAAQMD Guidelines, if the project is below the screening size, all basic construction mitigation measures are included during construction, and construction activities would not be inconsistent with certain metrics identified by the Guidelines, then construction-related impacts are less than significant.⁶ The Preferred Project would implement the Basic Construction Mitigation Measures listed below. With implementation of these mitigation measures, the Preferred Project would result in less-than-significant air quality impacts.

- AQ-1* All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- AQ-2* All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- AQ-3* All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping shall be prohibited.
- AQ-4* All vehicle speeds on unpaved roads shall be limited to 15 mph.
- AQ-5* All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible.
- AQ-6* Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
- AQ-7* All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.
- AQ-8* Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Cultural Resources

The project would not cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5; cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5; directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or disturb any human remains, including those interred outside of formal cemeteries.

⁶ BAAQMD, *BAAQMD CEQA Guidelines*, May 2011. Page 3-5.

As identified in the *Historic Property Survey Report for the I-80 Bicycle/Pedestrian Overcrossing Project* (HPSR) prepared by Donaldson Associates, the Aquatic Park property is over 50 years old and, therefore, potentially eligible for listing in the National Register of Historic Resources (NRHR) and California Register of Historic Resources (CRHR).⁷ A cultural resources technical memorandum was prepared in September 2012 to document the existing conditions at Aquatic Park and note any changes that have occurred since the HPSR was completed in 1999.⁸

In determining Aquatic Park's eligibility for listing in the NRHR and CRHR, both integrity and significance were evaluated. The HPSR determined that although Aquatic Park retains the same major components that were part of the park when it was first opened, there have been major changes to the design of the park. These changes includes: alteration of the lagoon from one single body of water to three separate lagoons; addition of structures that were not part of the original design; landscaping that removed a portion of Bolivar Drive on the east side of the park; loss of the Works Progress Administration (WPA) rock retaining wall that once surrounded the lagoon(s); and the addition of recreation activities, including an 18-hole disc golf course. These changes have resulted in the loss of integrity of design, materials, and workmanship.

According to the HPSR, the project site is significant at the local level under NRHR criterion A and CRHR criterion 1 as a part of the WPA work in the Bay Area. Further, the project site may be significant under NRHR criterion C and CRHR criterion 3 as an example of a 1930s aquatic park built by WPA. According to the National Register Criteria for Evaluation, NRHR criterion A identifies sites that are "associated with events that have made a significant contribution to the broad patterns of our history"; and criterion C identifies sites "that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction." CRHR criterion 1 identifies sites that are "associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage; and Criterion 3 identifies sites that "embody the distinctive characteristics of a type, period, region, or method of construction, represent the work of an important creative individual, or possess high artistic values." However, due to the loss of integrity associated with the changes to Aquatic Park identified above, the project site is not eligible for listing in the NRHR or CRHR. Further, Aquatic Park has not been designated as a local landmark.

The Preferred Project would not include the demolition or alteration of any buildings or structures nor would the project involve land use changes or construction of new structures. As such, no impacts on the potentially historic architectural resources would occur. In addition, the HPSR concluded that

⁷ Donaldson Associates, *The Historic Property Survey Report for the I-80 Bicycle/Pedestrian Overcrossing Project*, May 13, 1999. Available for review Monday through Friday between the hours of 8:30 am and 4:00 p.m. at the City of Berkeley, Parks Recreation and Waterfront Administration Office, 2180 Milvia Street, 3rd Floor, and the City of Berkeley, Recreation Offices, 1947 Center Street, 1st Floor.

⁸ Denise Bradley, ASLA, "Berkeley Aquatic Park DPR523 Record (1999): Updating Existing Conditions Description," memorandum to Deborah Chernin, City of Berkeley, September 7, 2012, revised September 13, 2012. Available for review Monday through Friday between the hours of 8:30 am and 4:00 p.m. at the City of Berkeley, Parks Recreation and Waterfront Administration Office, 2180 Milvia Street, 3rd Floor, and the City of Berkeley, Recreation Offices, 1947 Center Street, 1st Floor.

because the project site consists of heterogeneous fill placed in a historically submerged bayland area, there are no archaeological or prehistoric cultural resources at the site.⁹ There is also no evidence or previous findings of paleontological or unique geological resources in the project area or formal cemeteries.¹⁰

Therefore, impacts of the Preferred Project would be less than significant.

Geology and Soils

The project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42); strong seismic ground shaking; seismic-related ground failure, including liquefaction or landslides. The project would not result in substantial soil erosion or the loss of topsoil; be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse; or have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

The project site is not located within an Alquist-Priolo Earthquake Fault zone.¹¹ Because the Preferred Project would not involve placing people at the project site, it would not result in increased exposure to seismic or other geotechnical hazards. The site is located in a developed area of the City that is served by municipal systems. No septic tanks present or proposed.

The topic of soil erosion is discussed in Section 4.3, Hydrology and Water Quality, of this Draft EIR.

Greenhouse Gas Emissions

The project would not generate greenhouse gas (GHG) emissions, either directly or indirectly, that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

As a water quality and habitat improvement project, the Preferred Project would not include components commonly associated with the direct or indirect generation of GHG emissions, which are commonly associated with land use development projects. The Preferred Project would not result in the indirect emission of greenhouse gases associated with solid waste generation, water supply, wastewater generation, energy demand, or traffic. Construction activities would require the operation of equipment that would generate GHG emissions; however, per BAAQMD CEQA Guidelines, there is no threshold

⁹ Donaldson Associates, *The Historic Property Survey Report for the I-80 Bicycle/Pedestrian Overcrossing Project*, May 13, 1999.

¹⁰ City of Berkeley, *West Berkeley Project, Draft Environmental Impact Report*, Chapter 4.C, January 2010.

¹¹ California Department of Conservation, Alquist-Priolo Earthquake Fault Zone Maps, Oakland West Quadrangle, January 1, 1982.

of significance for evaluating construction-related greenhouse gas emissions.¹² As appropriate, the City will ensure that best management practices (BMPs) are implemented to reduce GHG emissions during construction, as applicable. BMPs include, but are not limited to using alternative fueled construction vehicles/equipment, using local building materials of at least 10 percent; and recycling or reusing at least 50 percent of construction waste or demolition materials. Because the Preferred Project would not result in a significant increase in GHG emissions both indirectly or directly, it would also not conflict with adopted GHG reduction plans.

Hazards and Hazardous Materials

The project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school; be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5; impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

One of the primary objectives of the Preferred Project is to improve water quality and habitat at Aquatic Park. There are currently no activities at the site that involve handling or significant use of hazardous materials. Common construction-related hazardous materials including, but not limited to fuel, oil, and solvents would be used on a limited and temporary basis during habitat restoration and infrastructure improvements. The use of these materials is strictly regulated and would be conducted in accordance with applicable laws and regulations, as required in contract specifications. The Preferred Project would not involve operations that would routinely use hazardous materials that could pose a risk of upset or accident involving the release of hazardous materials into the environment.¹³ The Preferred Project would not include new development or modification of existing development that could expose the public to hazards associated with wildfires or airports. The Aquatic Park project site is not included on list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.¹⁴

Land Use and Planning

The project would not physically divide an established community; conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of

¹² BAAQMD, *BAAQMD CEQA Guidelines*, May 2011. Page 8-6.

¹³ Refer to Impact HYD-1 in Section 4.3, Hydrology and Water Quality, for a description how potential contaminants in soil/sediment would be managed.

¹⁴ California Department of Toxic Substances Control, EnviroStor (www.envirostor.dtsc.ca.gov). Search criterion: Aquatic Park.

avoiding or mitigating an environmental effect; or conflict with any applicable habitat conservation plan or natural community conservation plan.

A project would have a significant impact on land use and planning if it would conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project site. Typically, compliance with applicable municipal code stipulations, general plan policies, and resource agency regulations is evaluated to determine the significance of impact. The Preferred Project would not include alteration of existing or construction of new land use development, and the Preferred Project would not modify the existing use of the project site. As such, the potential for conflict with the City's Zoning Code and land use designations contained in the Land Use Element of the City's General Plan would not exist, nor would the Preferred Project divide an established community. The Preferred Project is a response to the San Francisco Regional Water Quality Control Board's (RWQCB) 2004 finding that water temperatures and dissolved oxygen levels in the Aquatic Park lagoons are not supportive of fish populations. The Preferred Project would improve water quality at the project site, thereby improving habitat for aquatic, terrestrial, and avian species, which would support Basin Plan objectives. Therefore, the Preferred Project would not result in any conflicts with land use or planning.

Mineral Resources

The project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state or result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Activities associated with the Preferred Project would involve limited ground-disturbing construction activities in order to improve water quality and habitat at Aquatic Park. The Preferred Project would not result in major land use changes or development on previously undeveloped land that would affect mineral resources.

Noise

The project would not result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels; a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The Preferred Project would not result in new development or changes to land use; therefore, it would not include operational noise-generating features such as an increase in traffic conditions or stationary equipment (e.g., HVAC). No permanent increases in ambient noise would occur. The project site is not within a land use plan or within two miles of public airport.

Due to the nature of construction associated with the project (i.e., repair of existing storm drains, wetland creation), noise from construction equipment would be limited to heavy equipment use such as

excavators, graders, and trucks. No pile driving or other vibration-inducing construction activities are expected.

Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (early morning, evening, or nighttime hours), the construction occurs in areas immediately adjoining noise sensitive land uses, or when construction durations last over extended periods of time. Construction noise is regulated by the City's Noise Ordinance (Section 13.40) and the project would be required to comply with the following provisions in the City's municipal code:

Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work before 7:00 a.m. on a weekday (or before 9:00 a.m. on a weekend or holiday) or after 7:00 p.m. on a weekday (or after 8:00 p.m. on a weekend or holiday) such that the sound from across a residential or commercial real property line violates Section established acceptable noise levels, except for emergency work of public service utilities or by variance issued by the Environmental Health Division or noise control office.

Where technically and economically feasible, construction activities shall be conducted in such a manner that the maximum sound levels at affected properties will not exceed those listed in Table 13-40-3 of Section 13.40.070 of Municipal Code.

Compliance with the City's Noise Ordinance would ensure that construction-related noise impacts remain less than significant.

Population and Housing

The project would not induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure); displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

The Preferred Project would not result in new development or changes to permitted land uses. As such, the Preferred Project would not result in any population-based effects, nor would it include construction of new housing or displacement of existing residents. The Preferred Project would have no impact on population and housing.

Public Services

The project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services: fire protection; police protection; schools; parks; or other public facilities.

The Preferred Project would not result in new development or changes to permitted land uses and, thus, would not result in growth-inducing effects that could require additional public services such as police, fire, public schools, or public libraries. The Preferred Project would have no impact on public services in the surrounding area.

Recreation

The project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

The project site is one of the largest parks in the City and is used for active recreation such as waterskiing, rowing, kayaking, bicycling, hiking, disc golf, and bird watching. Implementation of the Preferred Project would not substantially increase the use of the project site or other recreation areas in the City because it would not result in new development or additional population. An objective of the project is to improve water quality and habitat at Aquatic Park while maintaining the balance of recreational uses and habitat areas. The infrastructure components of the Preferred Project are intended to help improve tidal exchange by changing how water moves in and out of the lagoon. However, there is a minimal water level the City must maintain for recreational uses, and the Preferred Project would not result in a lowering of that level. Because there would be no decrease in water levels in the lagoons compared to existing conditions that could adversely affect water-based activities such as waterskiing, rowing, and kayaking, no adverse effects on the availability of these recreational uses is expected. Some land-based recreational activities (e.g., bicycling, hiking, bird-watching) may need to be temporarily limited or disrupted during construction to accommodate restoration activities, or some features such as trails may need to be relocated. However, there would be no permanent loss of land-based recreational opportunity locations at the park that would necessitate the need to construct new or replacement facilities elsewhere that could result in adverse environmental effects. Further, the Preferred Project is anticipated to enhance overall recreational opportunities because of water quality and habitat improvements. Therefore, impacts of the Preferred Project would be less than significant.

Transportation/Traffic

The project would not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit; conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways; result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks; substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); result in inadequate emergency access; or conflict with adopted policies, plans, or programs regarding public

transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

The Preferred Project would not include construction of new development, modification of existing development, or changes to land use designations that could affect existing transit and traffic conditions in the project area. The Preferred Project is limited to infrastructure and habitat improvements at the project site and, therefore, would have no impact on transportation or traffic.

Utilities and Service Systems

The project would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board; require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. The project would have sufficient water supplies available to serve the project from existing entitlements and resources; be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs; and comply with federal, state, and local statutes and regulations related to solid waste.

The Preferred Project would not include new development of any changes to land use designations. No increased population would result and no increased demand on utilities would occur. The Preferred Project would not generate additional solid waste or wastewater, nor would it require additional water or energy supplies over existing conditions.

The Preferred Project would modify the existing storm drain system at Aquatic Park. This is discussed in Section 4.3, Hydrology and Water Quality, of the Draft EIR.

6.2 SIGNIFICANT AND UNAVOIDABLE ENVIRONMENTAL IMPACTS

Section 21100(b)(2)(A) of the CEQA requires that an EIR identify any significant environmental effects that cannot be avoided if the Preferred Project is implemented. As described in Section 4, Environmental Analysis, most impacts identified for the Preferred Project would either be less than significant or could be mitigated to less-than-significant levels. However, the Preferred Project would result in one significant impact that cannot be mitigated to a less-than-significant level. The Preferred Project would have a significant and unavoidable project and cumulative hydrologic impact related to potential exceedance of storm drain capacity, which could result in off-site flooding.

Due to this significant and unavoidable effect, approval of the Preferred Project would require the adoption of a Statement of Overriding Consideration, indicating that the City of Berkeley is aware of the significant environmental consequences and believes that the benefits of approving the Preferred Project outweigh its unavoidable significant environmental impacts.

6.3 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

Section 21100(b)(2)(B) of CEQA requires that an EIR identify any significant effect on the environment that would be irreversible if the Preferred Project were implemented. Section 15126.2(c) of the CEQA Guidelines identifies irreversible environmental changes as those involving a large commitment of nonrenewable resources or irreversible damage resulting from environmental accidents.

Implementation of the Preferred Project would involve the use of typical construction equipment necessary for excavation and earthwork and site grading of the Aquatic Park lagoons. This equipment would require nonrenewable resources to operate; however, the construction phase of the Preferred Project would be short-term and the amount and rate of consumption of these resources would not result in the unnecessary, inefficient, or wasteful use of resources. Operation of the Preferred Project would result in the consumption of a negligible amount of nonrenewable resources.

Accidents, such as the release of hazardous materials, could trigger irreversible environmental damage. However, as described in Impacts Found to be Less Than Significant, above, the Preferred Project would implement applicable regulations to ensure that impacts related to the exposure or release of hazardous materials are less than significant.

6.4 GROWTH-INDUCING IMPACTS

Section 15126.2(d) of the CEQA Guidelines states that an EIR should discuss "...the ways in which the Preferred Project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." Growth can be induced in a number of ways, including through the elimination of obstacles to growth, through the stimulation of economic activity within the region, or through precedent-setting action. CEQA requires a discussion of how a project could foster population, employment, or housing growth in the areas surrounding the project, as well as an analysis of how any such induced growth could tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. This section of the EIR discusses the manner in which the Preferred Project could affect growth in the City of Berkeley and the larger Bay Area.

In accordance with the CEQA Guidelines, Section 15126.2, this discussion of growth inducement is not intended to characterize growth induced by the Preferred Project as necessarily beneficial, detrimental, or of little significance to the environment. The growth inducement discussion is provided for informational purposes so that the public and local decision-makers have an appreciation of the potential long-term growth implications of the Preferred Project.

As discussed in Section 3, Project Description, the Preferred Project is intended to improve water quality and biological habitat in Aquatic Park. The Preferred Project would modify the storm drain connections that currently convey stormwater from the Potter and Strawberry basins into the Aquatic Park lagoons and the Bay. The Preferred Project would improve inter-lagoon circulation and lagoon to Bay tidal exchange. However, the Preferred Project would not include development of new housing or

provision additional jobs to the City. Further, the Preferred Project would not indirectly induce population growth by improving transportation routes or developing infrastructure in areas not previously served by local utilities. Construction would be short term and would not require workers from outside of the City to relocate closer to the project site. Although it is reasonable to assume that the recreation improvements included in the Preferred Project could slightly increase the recreational use of Aquatic Park, such improvements would not induce population growth in the City or surrounding Bay Area. Therefore, implementation of the Preferred Project would not facilitate or contribute to unanticipated growth in the City of Berkeley or the County of Alameda.

6.5 CUMULATIVE IMPACTS

CEQA Guidelines Section 15355 defines cumulative impacts as “... two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” The combination of the Project with other reasonably foreseeable probable future projects in the vicinity or region affected by the Preferred Project, defines the cumulative scenario. Cumulative impacts and the Preferred Project’s contribution to the cumulative impacts are addressed in Sections 4.2 and 4.3 of this Draft EIR. As discussed in Section 4.2, the Preferred Project would not result in any significant cumulative biological resources impacts. The Preferred Project would result in a cumulative hydrology impact related to potential exceedance of storm drain capacity, which could result in off-site flooding.

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|--|------------|
| Section 6 Other CEQA Considerations..... | 6-1 |
| 6.1 Impacts Found to Be Less Than Significant | 6-1 |
| 6.2 Significant and Unavoidable Environmental Impacts..... | 6-10 |
| 6.3 Significant Irreversible Environmental Changes | 6-11 |
| 6.4 Growth-Inducing Impacts..... | 6-11 |
| 6.5 Cumulative Impacts | 6-12 |

Section 7

List of Preparers

7.1 LEAD AGENCY

City of Berkeley Department of Parks and Recreation – Lead Agency

- Deborah Chernin – Principal Planner

7.2 CONSULTANTS

Atkins, San Francisco, California

Responsible for EIR project management, document production, and technical analysis:

- Erin Efner – Project Manager
- Matthew Berke – Environmental Analyst
- Seth Jarsky – Scientist
- Alice Tackett – Senior Scientist
- Marc Beccio – Senior Scientist/Biologist
- Jackie Ha, Joel Miller – Document Production

Balance Hydrologics, Inc., Berkeley, California

Responsible for Section 4.3 Hydrology and Water Quality:

- Chris White – Principal, Water Quality Specialist
- Edward Ballman – Principal, Civil Engineer/Hydrologist
- Eric Riedner – Civil Engineer/Hydrologist

ENVIRON International Corporation, Emeryville, California

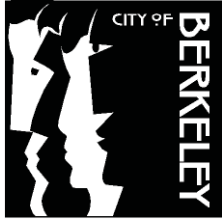
Responsible for biological resource technical studies:

- Robert Abbott – Principal
- Mark Jasper – Biologist
- Rena Obernolte – Biologist

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Appendix A Notices of Preparation and Scoping Comments Received

Appendix A1 First Notice of Preparation



Planning and Development Department
Current Planning Division

Notice of Preparation of an Environmental Impact Report & Notice of Scoping Meeting

DATE: June 24, 2009

TO: Responsible Agencies, Agencies with Jurisdiction by Law, Trustee Agencies, Involved Federal Agencies, and Agencies/People Requesting Notice

FROM: City of Berkeley
Department of Parks, Recreation & Waterfront
ATTN: Deborah Chernin
2180 Milvia Street
Berkeley, CA 94704
Fax: (510) 981-6710

RE: **Notice of Preparation (NOP) of an Environmental Impact Report (EIR) and Notice of Scoping Meeting for the Berkeley Aquatic Park Hydrology and Habitat Improvement Project**

NOP: The City of Berkeley (Lead Agency) will prepare an EIR for the proposed Berkeley Aquatic Park Hydrology and Habitat Improvement Project. The project site consists of Aquatic Park, which is located on the western edge of the City of Berkeley, adjacent to Interstate 80 between Ashby and University Avenues. Aquatic Park encompasses 99 acres and includes three separate lagoons, totaling 68 acres, which support a variety of wildlife, including fish, invertebrates, and birds. The Park consists of 68 acres of aquatic habitat in the three lagoons, 0.7 acres of salt/brackish wetland, 1.1 acres of freshwater wetland, 11 acres of lawn, 7 acres of roads and trails, and 14 acres of buildings and uplands. The Park is also used for active recreation such as waterskiing, rowing, kayaking, bicycling, hiking, and bird watching. There is a disc golf course as well as a children's playground within the Park. The three lagoons consist of the Main Lagoon, the Model Yacht Basin, and the Radio Tower Pond.

The Aquatic Park Natural Resource Management Study (NRMS) was prepared in 2003. The NRMS recommended improving water quality in the three lagoons by increasing water circulation, primarily through better tidal exchange, and improving wetland habitat areas. In 2006, the City began the process of preparing the Aquatic Park Improvement Program (APIP), which included concept-level designs for

the major recommendations in the NRMS. The APIP analyzed and modeled 14 potential scenarios for achieving the goals identified in the NRMS.

The EIR will analyze the Parks and Recreation Commission (P&RC) Plan as the preferred project. As an alternative to the preferred project, the EIR will also analyze the Preferred Conceptual Design Plan as described in the APIP. Both the preferred project and the project alternative are described below.

The preferred project (P&RC Preferred Plan) would include rehabilitation of the existing tide tubes connecting the lagoons to San Francisco Bay in order to increase tidal exchange between the lagoons and Bay waters, thereby increasing the levels of dissolved oxygen and lowering the water temperature in the lagoons. The P&RC Preferred Plan would also eliminate the inflow of stormwater runoff to the lagoons from the Potter Street and Strawberry storm drains located at the south and north ends of the Park, respectively. Other components of the P&RC Preferred Plan would include constructing a 20-foot wide channel between the Model Yacht Basin and the Main Lagoon; modifying the Strawberry storm drain to allow tidal inflow and outflow to the Main Lagoon; and the potential installation of water quality best management practices (BMPs) in the watershed area that is directly tributary to the Aquatic Park lagoons. These BMPs may also include construction of created wetlands at Bird Island using excavated soil from within the lagoons. The P&RC Preferred Plan was not fully evaluated in the APIP.

The alternative project (APIP Preferred Conceptual Design) was identified as being the approach that, of the 14 scenarios presented in the APIP, could offer the greatest amount of tidal exchange between the lagoons and Bay waters, thereby increasing the levels of dissolved oxygen and lowering the water temperature in the lagoons. The APIP Preferred Conceptual Design (identified as “Recommended Alternative 4B” in the APIP) would consist of connecting the Radio Tower Pond to the Potter Street storm drain; enlarging the connection from the Potter Street storm drain to the Model Yacht Basin; constructing a 20-foot wide channel between the Model Yacht Basin and the Main Lagoon; modifying the Strawberry storm drain to allow tidal inflow and outflow to the Main Lagoon; and repairing dysfunctional tide tubes. The APIP Preferred Conceptual Design would allow no additional stormwater into the lagoons than under current conditions. As with the P&RC Preferred Plan, the APIP Preferred Conceptual Design would also include the potential installation of water quality best management practices (BMPs) in the watershed area that is directly tributary to the Aquatic Park lagoons. These BMPs may also include construction of created wetlands at Bird Island using excavated soil from within the lagoons. As indicated above, the APIP Preferred Conceptual Design will be evaluated in the EIR as an alternative to the preferred project.

Based on the project description and the Lead Agency’s understanding of the environmental issues associated with the project, the following topics will be analyzed in detail in the EIR:

- Biological Resources
- Hydrology and Water Quality

City of Berkeley

June 24, 2009

The Lead Agency solicits comments regarding the scope and content of the EIR from all interested parties requesting notice, responsible agencies, agencies with jurisdiction by law, trustee agencies, and involved agencies. Please send your written/typed comments (including a contact name) to the following:

City of Berkeley
Department of Parks, Recreation & Waterfront
ATTN: Deborah Chernin
2180 Milvia Street
Berkeley, CA 94704
DChernin@ci.berkeley.ca.us

Due to the time limits mandated by California law, written comments must be sent at the earliest possible date, but no later than July 28, 2009.

Notice of Scoping Meeting: Pursuant to California Public Resources Code §21081.7, 21083.9, and 21092.2, the Lead Agency will conduct a public scoping meeting for the same purpose of soliciting oral and written comments from interested parties requesting notice, responsible agencies, agencies with jurisdiction by law, trustee agencies, and involved federal agencies, as to the appropriate scope and content of the EIR. The scoping meeting will be held on Thursday, July 9, 2009 from 7:00 PM to 9:00 PM at the following location:

North Berkeley Senior Center
Workshop Room B
1901 Hearst Avenue
Berkeley, CA 94709

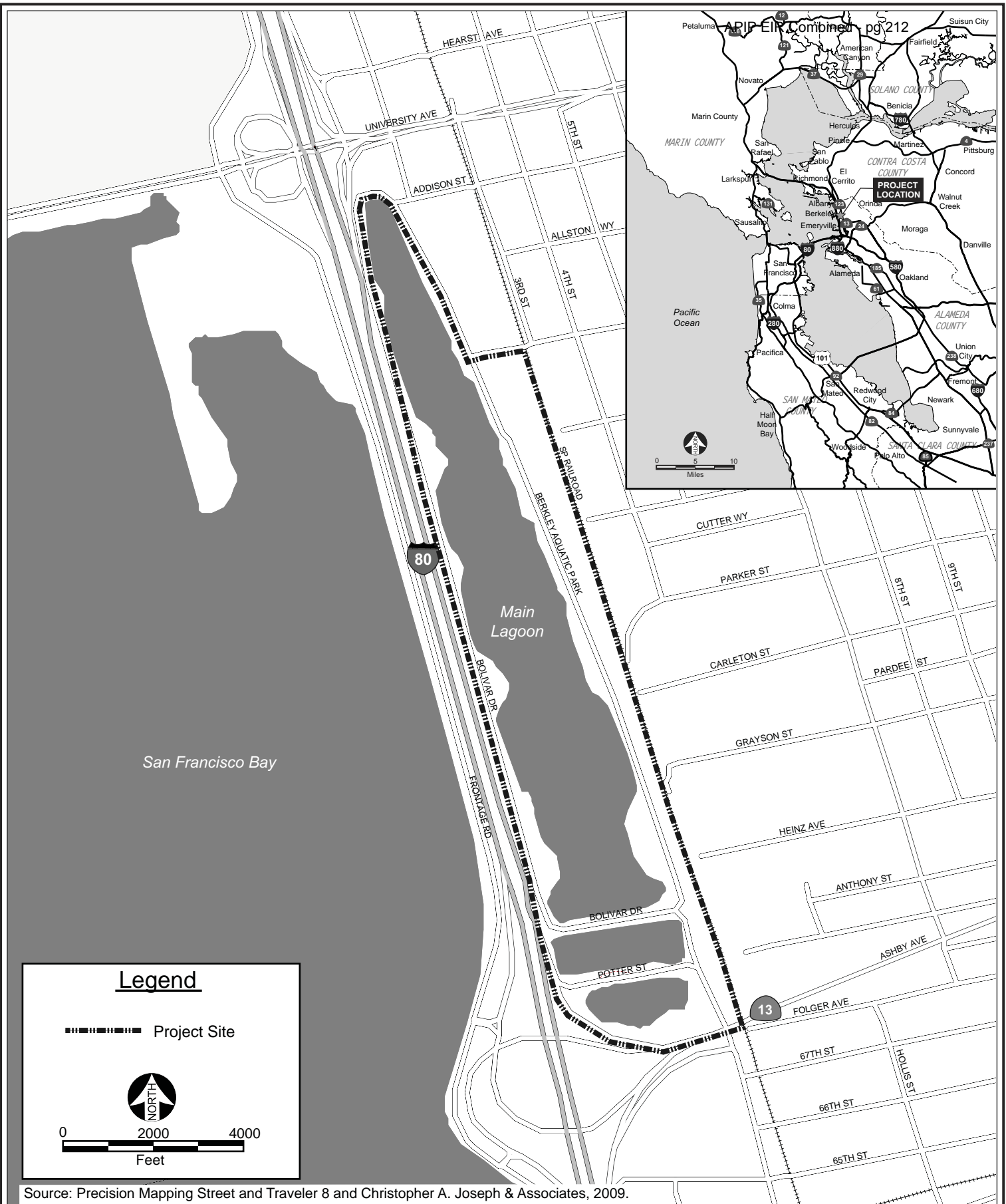
For additional information, please contact Deborah Chernin at (510) 981-6715.



Deborah Chernin
Principal Planner

Date:

6/23/09

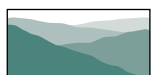


Source: Precision Mapping Street and Traveler 8 and Christopher A. Joseph & Associates, 2009.



CHRISTOPHER A. JOSEPH & ASSOCIATES
Environmental Planning and Research

Figure 1
Regional and Project Vicinity Map



***Appendix A2 Scoping Comments Received on the
First Notice of Preparation***



ARNOLD SCHWARZENEGGER
GOVERNOR

STATE OF CALIFORNIA
GOVERNOR'S OFFICE of PLANNING AND RESEARCH
STATE CLEARINGHOUSE AND PLANNING UNIT



CYNTHIA BRYANT
DIRECTOR

Notice of Preparation

June 24, 2009

To: Reviewing Agencies

Re: Berkeley Aquatic Park Hydrology and Habitat Improvement Project
SCH# 2009062093

Attached for your review and comment is the Notice of Preparation (NOP) for the Berkeley Aquatic Park Hydrology and Habitat Improvement Project draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Deborah Chernin
City of Berkeley
2180 Milvia Street
Berkeley, CA 94704

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

for: Scott Morgan
Assistant Deputy Director & Senior Planner, State Clearinghouse

Attachments
cc: Lead Agency

**Document Details Report
State Clearinghouse Data Base**

APIP EIR Combined - pg 218

SCH# 2009062093
Project Title Berkeley Aquatic Park Hydrology and Habitat Improvement Project
Lead Agency Berkeley, City of

Type NOP Notice of Preparation

Description The proposed project would improve water quality in the Aquatic Park lagoons by increasing water circulation and improving wetland habitat areas. The EIR will analyze the Parks and Recreation Commission (P&RC) Plan as the preferred project. As an alternative to the preferred project, the EIR will also analyze the Preferred Conceptual Design Plan as described in the Aquatic Park Improvement Program (APIP). The preferred project would rehabilitate the existing tide tubes connecting the lagoons to San Francisco Bay and would eliminate the inflow of stormwater runoff into the lagoons. The alternative project would improve tidal inflow and outflow and allow no additional stormwater into the lagoons than under current conditions.

Lead Agency Contact

Name Deborah Chernin
Agency City of Berkeley
Phone 510-981-6715 **Fax**
email
Address 2180 Milvia Street
City Berkeley **State** CA **Zip** 94704

Project Location

County Alameda
City Berkeley
Region
Cross Streets Approximately Ashby and University Avenues
Lat / Long 37° 51' 34.7" N / 122° 18' 04.6" W
Parcel No.
Township 1S **Range** 4W **Section** 9 **Base** MDB&M

Proximity to:

Highways I-80, I-580
Airports None
Railways Southern Pacific RR
Waterways San Francisco Bay
Schools Multiple
Land Use Recreation/Unclassified (U) Zoning/Parks and Open Space

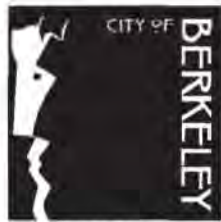
Project Issues Biological Resources; Drainage/Absorption; Flood Plain/Flooding; Wildlife; Wetland/Riparian; Water Supply; Water Quality; Vegetation

Reviewing Agencies Resources Agency; Department of Conservation; Department of Parks and Recreation; San Francisco Bay Conservation and Development Commission; Department of Water Resources; Department of Fish and Game, Region 3; Native American Heritage Commission; Public Utilities Commission; State Lands Commission; California Highway Patrol; Caltrans, District 4; State Water Resources Control Board, Division of Loans and Grants

Date Received 06/24/2009 **Start of Review** 06/24/2009 **End of Review** 07/23/2009

| | | | |
|---|--|---|---|
| <input type="checkbox"/> Fish & Game Region 2 Jeff Drongesen | <input checked="" type="checkbox"/> Public Utilities Commission Leo Wong | <input type="checkbox"/> Caltrans, District 8 Dan Kopulsky | <input type="checkbox"/> Regional Water Quality Control Board (RWQCB) RWQCB 1 Cathleen Hudson North Coast Region (1) |
| <input checked="" type="checkbox"/> Fish & Game Region 3 Robert Floerke | <input type="checkbox"/> Santa Monica Bay Restoration Guangyu Wang | <input type="checkbox"/> Caltrans, District 9 Gayle Rosander | <input type="checkbox"/> RWQCB 2 Environmental Document Coordinator San Francisco Bay Region (2) |
| <input type="checkbox"/> Fish & Game Region 4 Julie Vance | <input checked="" type="checkbox"/> State Lands Commission Marina Brand | <input type="checkbox"/> Caltrans, District 10 Tom Dumas | <input type="checkbox"/> RWQCB 3 Central Coast Region (3) |
| <input type="checkbox"/> Fish & Game Region 5 Don Chadwick Habitat Conservation Program | <input type="checkbox"/> Tahoe Regional Planning Agency (TRPA) Cherry Jacques | <input type="checkbox"/> Caltrans, District 11 Jacob Armstrong | <input type="checkbox"/> RWQCB 4 Teresa Rodgers Los Angeles Region (4) |
| <input type="checkbox"/> Fish & Game Region 6 Gabriela Gatchel Habitat Conservation Program | | <input type="checkbox"/> Caltrans, District 12 Chris Herre | <input type="checkbox"/> RWQCB 5S Central Valley Region (5) |
| <input type="checkbox"/> Fish & Game Region 6 I/M Gabriela Gatchel Inyo/Mono, Habitat Conservation Program | <u>Business, Trans & Housing</u> <input type="checkbox"/> Caltrans - Division of Aeronautics Sandy Hesnard | <u>Cal EPA</u> <input type="checkbox"/> Air Resources Board | <input type="checkbox"/> RWQCB 5F Central Valley Region (5) Fresno Branch Office |
| <input type="checkbox"/> Dept. of Fish & Game M George Isaac Marine Region | <input type="checkbox"/> Caltrans - Planning Terri Pencovic | <input type="checkbox"/> Airport Projects Jim Lerner | <input type="checkbox"/> RWQCB 5R Central Valley Region (5) Redding Branch Office |
| <u>Other Departments</u> <input type="checkbox"/> Food & Agriculture Steve Shaffer Dept. of Food and Agriculture | <input type="checkbox"/> California Highway Patrol Scott Loetscher Office of Special Projects | <input type="checkbox"/> Transportation Projects Douglas Ito | <input type="checkbox"/> RWQCB 6 Lahontan Region (6) |
| <input type="checkbox"/> Dept. of General Services Public School Construction | <input type="checkbox"/> Housing & Community Development CEQA Coordinator Housing Policy Division | <input type="checkbox"/> Industrial Projects Mike Tollstrup | <input type="checkbox"/> RWQCB 6V Lahontan Region (6) Victorville Branch Office |
| <input type="checkbox"/> Dept. of General Services Anna Garbeff Environmental Services Section | <u>Dept. of Transportation</u> <input type="checkbox"/> Caltrans, District 1 Rex Jackman | <input type="checkbox"/> California Integrated Waste Management Board Sue O'Leary | <input type="checkbox"/> RWQCB 7 Colorado River Basin Region (7) |
| <input type="checkbox"/> Dept. of Public Health Bridgette Binning Dept. of Health/Drinking Water | <input type="checkbox"/> Caltrans, District 2 Marcelino Gonzalez | <input type="checkbox"/> State Water Resources Control Board Regional Programs Unit Division of Financial Assistance | <input type="checkbox"/> RWQCB 8 Santa Ana Region (8) |
| <u>Independent Commissions/Boards</u> <input type="checkbox"/> Delta Protection Commission Linda Flack | <input type="checkbox"/> Caltrans, District 3 Bruce de Terra | <input type="checkbox"/> State Water Resources Control Board Student Intern, 401 Water Quality Certification Unit Division of Water Quality | <input type="checkbox"/> RWQCB 9 San Diego Region (9) |
| <input type="checkbox"/> Office of Emergency Services Dennis Castrillo | <input type="checkbox"/> Caltrans, District 4 Lisa Carboni | <input type="checkbox"/> State Water Resources Control Board Steven Herrera Division of Water Rights | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Governor's Office of Planning & Research State Clearinghouse | <input type="checkbox"/> Caltrans, District 5 David Murray | <input type="checkbox"/> Dept. of Toxic Substances Control CEQA Tracking Center | |
| <input checked="" type="checkbox"/> Native American Heritage Comm. Debbie Treadway | <input type="checkbox"/> Caltrans, District 6 Michael Navarro | <input type="checkbox"/> Department of Pesticide Regulation CEQA Coordinator | |
| | <input type="checkbox"/> Caltrans, District 7 Elmer Alvarez | | |

Last Updated on 03/24/2009




PARKS RECREATION & WATERFRONT

TRANSMITTAL

Date: 3 August 2009

To: Erin Efner, Christopher A. Joseph & Associates

From: Deborah Chernin 

Subject: APIP CEQA PUBLIC COMMENTS

Attached are the following written comments received by the City regarding the APIP NOP.

APIP PUBLIC COMMENTS FROM SCOPING SESSION ON JULY 9, 2009

| <i>Date</i> | <i>Name</i> | <i>Representing</i> | <i>Format</i> |
|-------------|------------------------|------------------------------------|---------------|
| 7/27/2009 | Lisa Carboni | Caltrans District 4 | Letter |
| 7/28/2009 | Patricia Vaughan Jones | CESP | Email |
| 7/28/2009 | Carole Schemmerling | Strawberry Creek Watershed Council | Email |
| 7/28/2009 | Lisa Stephens | | Email |
| 7/28/2009 | Mark Liolios | Aquatic Park EGRET | Email/letter |
| 7/27/2009 | Mike Lynes | Golden Gate Audubon Society | Email/letter |
| 7/23/2009 | Cyndy Shafer | State Parks | Letter |
| 7/13/2009 | Elizabeth Musbach | East Bay Regional Park District | Letter |
| 7/19/2009 | Norman La Force | Sierra Club, SF Bay Chapter | Email |
| 7/2/2009 | Lee Chien Huo | ABAG/SF Bay Trail Project | Letter |
| | | | |

DEPARTMENT OF TRANSPORTATION

111 GRAND AVENUE
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 622-5491
FAX (510) 286-5559
TTY 711



*Flex your power!
Be energy efficient!*

July 27, 2009

ALA080152
ALA-80-5.82
SCH#2009062093

Ms. Deborah Chernin
City of Berkeley
2180 Milvia Street
Berkeley, CA 94704

Dear Ms. Chernin:

Berkeley Aquatic Park Hydrology and Habitat Improvement Project – Notice of Preparation

Thank you for including the California Department of Transportation (Department) in the environmental review process for the Berkeley Aquatic Park Hydrology and Habitat Improvement Project. The following comments are based on the Notice of Preparation.

Encroachment Permit

Any work or traffic control within the State Right-of-Way (ROW) requires an encroachment permit that is issued by the Department. Traffic-related mitigation measures will be incorporated into the construction plans during the encroachment permit process. See the following website link for more information: <http://www.dot.ca.gov/hq/traffops/developserv/permits/>

To apply for an encroachment permit, submit a completed encroachment permit application, environmental documentation, and five (5) sets of plans which clearly indicate State ROW to the address at the top of this letterhead, marked ATTN: Michael Condie, Mail Stop #5E.

Should you have any questions regarding this letter, please call Yatman Kwan of my staff at (510) 622-1670.

Sincerely,

A handwritten signature in black ink that reads "Lisa Carboni".

LISA CARBONI
District Branch Chief
Local Development - Intergovernmental Review

c: State Clearinghouse

Chernin, Deborah

From: Citizens for East Shore Parks [eastshorepark@hotmail.com]
Sent: Tuesday, July 28, 2009 5:34 PM
To: Chernin, Deborah
Cc: 'Robert Cheasty'; 'Norman La Force'; 'Michael Lynes'; 'Mark Liolios'; 'Ed Bennett'; 'Larry Kolb'
Subject: comments: Aquatic Park Hydrology and Habitat Improvement Project DEIR

July 28, 2009

Deborah Chernin

City of Berkeley

Parks, Recreation and Waterfront Department 2180 Milvia Street, 3rd Floor Berkeley, CA 94704

RE: Aquatic Park Hydrology and Habitat Improvement Project DEIR

Dear Ms. Chernin:

Citizens for East Shore Parks (CESP) submits this email as our comment on the Aquatic Park Hydrology and Habitat Improvement Project DEIR.

CESP would like to wholeheartedly concur with the comments submitted to you by the Sierra Club on July 19, 2009 and the Golden Gate Audubon Society on July 28, 2009.

Thank you for considering our comments.

Patricia Vaughan Jones

Executive Director

Citizens for East Shore Parks

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www.eastshorepark.org

7/28/2009

Chernin, Deborah

From: Griffin, Andrew
Sent: Tuesday, July 28, 2009 3:50 PM
To: Chernin, Deborah
Subject: FW: City of Berkeley APIP

FYI

-----Original Message-----

From: carole schemmerling [mailto:caroleschem@hotmail.com]
Sent: Tuesday, July 28, 2009 2:46 PM
To: Griffin, Andrew; ahutzel@scc.ca.gov; Brian Wines
Cc: Manager, C
Subject: City of Berkeley APIP

STRAWBERRY CREEK WATERSHED COUNCIL

JULY 28,2009

THE STRAWBERRY CREEK WATERSHED COUNCIL IS CONCERNED ABOUT BERKELEY'S PROPOSED AQUATIC PARK IMPROVEMENT PLAN. THE STAFF RECOMMENDATIONS DO NOT APPEAR TO RESOLVE THE PROBLEMS OF FLOODING AND STORMWATER INTRUSION WITHOUT VERY EXPENSIVE AND COMPLICATED STRATEGIES THAT ARE NOT VERY REALISTIC.

IT IS HIGHLY UNLIKELY THAT ANY OF THE TECHNICAL STRATEGIES PROPOSED TO IMPROVE THE HYDROLOGY WILL BE EFFECTIVE, ESPECIALLY IN THE EVENT OF ANY SIGNIFICANT SEA LEVEL RISE, AND THERE IS NO WAY TO PAY FOR MAINTAINENCE OF ANY OF THE TECHNOLOGY.

ALL OF THE PROBLEMS IN THE LAGOON HAVE EXISTED FOR DECADES AND YET IT REMAINS AN IMPORTANT WILDLIFE DESTINATION AND HABITAT DESPITE ALL THE WATER QUALITY, AND FLOODING ISSUES.

THE COASTAL CONSERVANCY MONEY IS PRIMARILY TO BE USED FOR HABITAT RESTORATION, AND THAT IS WHAT THE PROJECT SHOULD FOCUS ON, NOT TECHNOLOGY THAT WILL LIKELY BE INADEQUATE AND DIFFICULT TO MAINTAIN, AND IF THE MONEY IS SPENT ON THE STRATEGIES WHICH ARE PROPOSED, THERE WILL BE LITTLE LEFT FOR HABITAT RESTORATION.

THE CITY WOULD BE WISE TO SPEND THE GRANT ON THE MOST COST EFFECTIVE, AND ENVIRONMENTALLY BENEFICIAL IMPROVEMENT, WHICH IS VEGETATION AND LOTS OF IT. THEREFORE WE SUGGEST THAT THE MONEY BE SPENT ON HABITAT RESTORATION ONLY AT THIS TIME. SOME OF THE STRATEGIES THAT CAN BE USED ARE:

- * VEGETATED SWALES AND BERMS TO COPE WITH STORMWATER RUNOFF
- * INTENSIVE PLANTING OF TREES ON THE SLOPE BELOW THE RR TRACKS AND FREEWAY.
- * SHORELINE PLANTING OF WILLOWS, ALDERS,ETC, WITH INTERRUPTIONS FOR VIEWING.
- * MASSING OF LARGE AND SMALL SHRUBS AT APPROPRIATE AREAS FOR WIND PROTECTION.

7/28/2009

* ENHANCEMENT OF THE FRESH WATER MARSHES ON THE EASTERN SHORE.

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Chernin, Deborah

From: Lisa Stephens [greenlisastephens@gmail.com]
Sent: Tuesday, July 28, 2009 5:00 PM
To: Chernin, Deborah
Subject: EIR Scoping: Aquatic Park Hydrology and Habitat Improvement Project

Deborah:

Please forward the letter, recommendations and supporting material I sent to the City Council on June 24, 2008 to the consultants for inclusion in the scope of the EIR for the Aquatic Park Hydrology and Habitat Improvement Project. The entire packet is a matter of record and was officially received by the City Clerk as a supplemental communication prior to the Council meeting.

I would further request that the comments received by the Aquatic Park Subcommittee of the PRC from Brian Wines shortly prior to the departure of Heather McMillan be forwarded to the consultants to aide in scoping the project. The APSC and the Commission never had an opportunity to take these comments into consideration prior to the selection of Hydrology Option 4B, with or without stormwater pollution. These comments identify significant environmental impacts that must address in the scope of the project.

I would also ask that the non-hydrology habitat improvements identified by the APSC be include in the scope of this project. Heather McMillian's excellent notes and summaries of the more than 2 year process could be of immense help to the consultants in scoping the project. My recommendation to the City Council include the improvements that will have the most immediate impact on the bird population, both resident and migratory.

Including the non-hydrology habitat improvements in the scope of the project for review, either as part of the preferred project or as an alternative, is important because Hydrology Option 4B illegal. The PRC 4B modified has many problems; if operated as intended, to exclude all stormwater, might result in habitat improvement if other impacts are mitigated. However, several members of the City Council stated on the record that this IS NOT how the system will operate in a major flood event that threatens West Berkeley business property. This is illegal.

Failure to study other alternatives will result in an unfundable project.

Thank you,

Lisa Stephens
Former PRC Commission and member APSC
510-575-2068

7/28/2009

To: City of Berkeley
Department of Parks, Recreation & Waterfront Department
ATTN: Deborah Chernin
2180 Milvia Street
Berkeley, CA 94704
DChernin@ci.berkeley.ca.us

From: Mark Liolios
Aquatic Park EGRET
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Berkeley, CA 94703
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July 28, 2009

EIR Comments for the Berkeley Aquatic Park Hydrology and Habitat Improvement Project

"Circulation" Project is Designed to Serve as a Flood Control Project

This "circulation" project is designed to serve the City as a flood control project by construction of facilities that allow the diversion of storm water into the Aquatic Park lagoons. If built, that is the way in which it will be operated and all impacts of that expected operation are the ones that the EIR is required to study.

The two project proposals to increase circulation are identical; they vary only in operation. The option that allows the discharge of storm water into the lagoons – in violation of the permanent ban on such discharges by State Water Board Order 70-14 – states that it will allow no more storm water into the lagoons than currently is discharged. If the storm drain outlets are constructed, that is unlikely to be the way in which it is actually operated. It is not likely the City staff will partially close the three new discharge valves at the beginning of each new rainstorm in order to mimic current (also non-permitted) discharge conditions and that the staff will entirely close the new discharge valve into the Radio Tower Pond. Rather, it is expected that the gates will be kept in the fully open position during storms in order to increase the capacity of the two storm drains. The project review of this option, therefore, must analyze it in the way in which it will actually be used – a greatly increased level of discharge of storm water into the two-lagoon system and entirely new discharges into the Radio Tower Pond.

The likelihood that the project will be used to temporarily divert storm water into Aquatic Park is not just mere suspicion; it is explicitly stated in the City of Berkeley

Storm Drainage Master Plan by CH2M Hill. That Master Plan specifically identifies the use of the Aquatic Park lagoons as storm surge basins through construction of new floodgates to increase the capacity of Potter and Strawberry Storm Drains. Recent staff presentations to City Council about plans to reduce flooding have focused on the diversion of floodwaters to Aquatic Park. In the Mayor's office, this project is known as the Aquatic Park Flood Control Project. The Mayor has lobbied for project support saying it is needed to reduce flooding in West Berkeley. City staff has told council members from West Berkeley that the project will reduce flooding in their districts. Council member Darryl Moore stated during the most recent project presentation to Council that he would make sure that the project was used to move floodwaters into the park. The channel proposed between the Main Lagoon and the Model Yacht Basin is sized to handle not just increased tidal flows, but full discharge of flood waters through the widened storm drain outlets. The proposed earth berm around the Radio Station Building is built to a sufficient height to protect it from floodwater discharges, not from expected tidal circulation, which has never required such a berm before. Finally, Parks Commissioners were told that the City Attorney's office had determined that if the larger flood control gates were to be constructed, the City would have a legal liability to operate them for flood control to avoid damages caused by flooding.

If the City Attorney's office has determined that the project must be operated for flood control, then it is a flood control project and those impacts must be studied. It is not reasonable or defensible to think that if the City spends millions of dollars building larger floodgates that give them the ability to move economically harmful storm water into the park according to their Storm Drainage Master Plan and repeatedly stated intent, that the new floodgates would not be used in exactly that way.

The project option that allows the discharge of storm water into the park was rejected by the subcommittee that studied all the options. It was rejected by the full commission. It was rejected by the Berkeley City Council. It appears to still be under consideration not because such discharges are beneficial for the park's marine life, but because of its potential as flood control for the City. As such, this option must be compared against other flood control options, such as use of pumping to more rapidly move water out to the open bay. This is how many other cities rimming the bay handle flooding. The utility and environmental impacts of different pumping options must be compared to the proposed use of the park as a storm surge basin. Staff reports to Council have focused on the cost of pumping through a newly constructed pipe under the freeway and it is crucial that these cost estimates be analyzed for accuracy. More importantly, however, the EIR must consider the pumping option discussed throughout the APIP study period and specifically mentioned to Council during the most recent presentation. That option reduces construction costs by pumping storm water through pipes inserted into the existing storm drains.

The current proposal must also be analyzed as to its effectiveness for flood control. That was not studied, or if studied, has never been presented to Council or the public. It is unknown whether full use of these four new floodgates to shift storm water to the park would be expected to reduce flooding on Sixth Street by six inches or by only one sixth of an inch. Reports from some West Berkeley neighbors suggest that flooding in their area seems directly related to adequate maintenance and cleaning of the storm drain catch basins; once the basin is cleared of debris, floodwaters immediately dissipate. For Council to make an informed decision comparing the benefits of a proposed project with its environmental impacts, they must have accurate information on which to base that judgment.

Water Board Order 70-14

It must be noted that all storm water containing waste must be diverted away from the Aquatic Park lagoons by State order. Water Board Order 70-14 prohibits such discharge. It is a permanent order. It does not expire. While the City may apply to the Board to convert the prohibition into a permanent discharge permit, that has not yet taken place. Council has not clearly been told that step will be required. And while some staff members have suggested to Council the order applies to industrial waste only, the Water Board regulator for Alameda County flatly disagreed with this interpretation in project comments sent to the City and also in the July 3, 2008 article in the Berkeley Daily Planet. "The order was intended to keep all storm water away from the lagoon," Wines said. "He rejected Chernin's distinction between polluted wastewater and storm water, saying that all water carried by the storm drains necessarily carries urban waste and pollution."

The environmental benefits of discharging storm water into the lagoons are not at all clear and have not been explained. The multiple damages are well documented and are the basis of the prohibition order. The process to overturn the order is lengthy. The Sierra Club has already written the Board opposing such a change. Golden Gate Audubon and Citizens for East Shore Parks also oppose such a change. The City has produced no formal, written memo from Board staff indicating any reasons why they would support overturning these nearly 40-year-old protections. Nor has there been documentation of the process the City will need to go through if they attempt to strip the park of this most basic water quality protection. Discharging storm water into the City's most regionally significant aquatic bird habitat does not appear to meet the standards of this community. Although the City of Berkeley Storm Water Master Plan did not mention the Board Order, it lies at the heart of the project. The permitting issues and the reasons for the order must be addressed directly and thoroughly. If the City believes they can get the Board to vote to change the discharge prohibition into a discharge permit, detailed written analysis from the Board staff must be included in the EIR analysis.

Techite "Diversion" Pipe

As part of its settlement of the Water Board's Order 70-14 permanently prohibiting the discharge of storm water into the Aquatic Park lagoon, the City agreed to construct a diversion pipe from Parker Street to the Potter Storm Drain. The City

stated at the time that the pipe would divert 80% of the local surface drainage into the Potter Storm Drain and out into the open bay where it would have reduced environmental impact. The techite diversion pipe, however, was constructed with no back-flow preventer and at such a low elevation that during storms it actually flows in the opposite direction. Rather than diverting local storm water away from the park, the pipe is built as a reliever valve for Potter and sends water from the City's entire south side into the lagoon at multiple locations.

The actual functioning of this pipe must be acknowledged in the EIR and its impacts studied and considered. For example, construction of the preferred option of no storm water discharge from the two storm drains that bracket the park means that a back-flow preventer would have to be constructed where the diversion pipe meets Potter. This was discussed by the subcommittee and the commission, but has not been explicitly spelled out in any of the project reports.

Additionally, the pipe is nearly forty years old and has been reported by staff to be in very poor operating condition. Joints have become misaligned, allowing contaminated water to leak into the park through gaps. Storm water regularly spews out the access covers, whose locking seals have been removed. The oil/water separators are in complete disrepair and the pipes leading to the techite pipe have blockages and breaks. Contractor video monitoring of the culvert's condition, and other culvert condition reports must be documented and figured into the environmental impacts of the project.

Topics for EIR Analysis

Flood Damage: The release of storm water into the Aquatic Park lagoons is the expected use of the new floodgates, so impacts of that flooding on the park must be thoroughly studied. As part of the APIP process, a topographic survey of the park was conducted. The results were never presented publicly, but they would serve as maps of expected flood conditions in the park, depending on the size and duration of the storm. These flood maps, coupled with the discharge capacity of the proposed larger flood valves, must be used to accurately determine expected project impacts. These include trail closure and damage, shoreline collapse, damage to vegetation, and infrastructure damage to the buildings, parking lots, roadways, utility lines, and other affected facilities. The EIR must consider the visitor impact of any resultant facility closures, the expected costs of cleaning up flood damage in the park and for repairing or replacing all damaged infrastructure. Trash debris from the current non-permitted discharges is limited primarily to the lagoons and shoreline edges. Increased flooding would move that trash problem to higher locations throughout the park. For example, if the wood chips that provide ADA-required access to the Dreamland for Kids playground are soaked with contaminated storm debris, what are the costs for removal, disposal, and replacement of those chips? What about damage to the facilities of City tenants and the contents of those buildings? Would salt water inundation cause damage to the park landscaping and the health of its vegetation? The City of Berkeley Storm Drainage Master Plan suggests flooding in the park to a depth of nine feet, so the full impacts may cover a wide area, including

neighboring private business developments, whose owners may not have received notification of the NOP.

Lagoon Levels: The project study period focused attention primarily on the volume of tidal exchange, but not on the problems associated with lagoon levels that are regularly higher than now or levels that are regularly lower than now. Under the proposed floodgate expansion project, what are the expected variations in lagoon levels? Shoreline collapse is a significant problem in management of both the park's infrastructure and its wildlife habitat value. As the original riprap that once held the shoreline in place has eroded or collapsed into the lagoons, the remaining shoreline consists in sections of poorly consolidated soil with a high sand content. Loss of shoreline armoring has increased the rate of erosion. Any higher lagoon levels will exacerbate this shoreline collapse, and those impacts must be analyzed. This should include impacts on shoreline trees and other vegetation, as well as shoreline trails, roadways, and utility lines. Shoreline vegetation that hangs out over the bay water provides roosting for egrets, herons, and other aquatic waterfowl. Loss of this screening could remove refuge areas for these birds to feed and rest. Replanting of the park's original cypress trees around the entire shoreline should be a project mitigation, with landside shrubs and groundcovers also planted to provide initial protection until the trees reach maturity.

Shoreline collapse could also create additional habitat problems by converting deepwater habitat along the shore into areas of shallow water, which could increase lagoon temperatures in warmer weather and spur the growth of aquatic vegetation.

While higher lagoon levels may have no obvious drawback for water recreation, they could impact shoreline trail users when high tides submerge trails, particularly during flood conditions. Would higher lagoon levels submerge and damage the park's historic masonry seating? A mitigation to be considered would be construction of additional seating terraces throughout the park at sufficiently higher elevations.

Lower lagoon levels also have negative habitat impacts to be considered. As recent actions by staff have shown, raising a single flap gate near the five Main Lagoon tide tubes drops lagoon levels two feet and converts formerly productive feeding grounds for shorebirds and wading birds into dry land that is accessible to park visitors and their dogs. If the opening onto the storm drains are at an even lower elevation than the concrete edge that allows water to drain through those five tide tubes – or if the project envisions lowering that opening on the eastern side of those five tubes – these problems will be exacerbated at shallow areas throughout the lagoons. Lower lagoon levels also could exacerbate the high temperature / low DO problem that can occur in warmer weather and that has been cited as a primary reason for project construction.

The recreational impact of lower lagoon levels must also be studied in the EIR, as lower lagoon levels reduces safety for skiers, rowers, and paddlers by bringing them

into closer contact with underwater obstacles. Mitigations for the skiers could include dredging of their slalom course, but only dredging of the entire lagoon would allow rowers and paddlers to continue their recreational activity throughout each day of the year in safety.

A key feature of the lagoon levels that is not obvious to the casual observer is that the lagoons are subject to extended periods of higher than normal tides and extended periods of lower than normal tides, due to the relation of the tidal cycle to the bayside openings of the tide tubes and storm drains. This fact is discussed in the Natural Resources Management Study (NRMS). While exposure to the air can be tolerated for six hours or even longer, it can be toxic to benthic invertebrates living in tidal zones that are desiccated for several days at a time.

Increased Sedimentation: The impacts of increased exchange of tidal waters must be considered in the EIR. A primary concern is the increased sedimentation of this regional deepwater habitat for waterfowl. Shallower water can increase water temperatures during warm weather, encourage aquatic vegetation, reduce safety for water recreational sports, and ultimately lead to the loss of the lagoons as deepwater habitat for migratory waterfowl. A guaranteed, funded plan of regular dredging, with monitoring to ensure compliance, is a project mitigation to be considered. Increased circulation may also increase the nutrient load on the lagoons, and the resulting impacts on algal blooms and other aquatic vegetation.

Storm Water Discharges: Any project operation that allows for the discharge of storm water containing waste – in violation of longstanding permanent State Water Board orders – must be analyzed for all contaminants and habitat impacts. The Aquatic Park Water Quality Study of 1994 lists some pollutant levels and the results of the City's recent three-year study of storm water quality should be published and also be included. Some pollutants and storm water contributions that should be studied include: toxic metals, bacteria, nutrients, chlorophyll, TPHs and PAHs, and the various types of trash contained in the urban effluent. The EIR should study water turbidity, sedimentation, water temperatures, dissolved oxygen levels, aquatic vegetation including algae, and suspended solids and particle size distribution.

A significant impact of storm water input to the lagoons is one that is not immediately obvious. The sudden discharge of large amounts of storm water runoff from the City's primary storm drains to the relative shallow, enclosed lagoons – even if completely filtered to drinking water standards – can be toxic to marine life due to the sudden change in salinity. All recent fish deaths have been attributed by staff and biological consultants as likely due to this cause.

Other water quality constituents for study appear in the Aquatic Park Water Quality Study of December 1994 on page 4 of Appendix A and throughout that report. They also appear in the preliminary project comments from the Water Board regulator from June 2007.

Maintenance and Operations of Structures

A range of factors determines the biological health of the aquatic life in the Aquatic Park lagoons. These include the City's maintenance and management practices for the resource, including repair and operation of all the built structures. These practices must be included in all project analysis and their habitat impacts clearly delineated, separate from that of tidal circulation volumes. Study of the comparative impacts of these operational decisions is particularly important, as the City has claimed that it can adaptively operate the built structures in any way desired, without regard to their environmental impacts.

Lagoon levels: Historically, the lagoon level was mechanically maintained at a level somewhat higher than the lowest bay tides in order to protect the safety of water recreational activities and for wildlife habitat value. This is accomplished through five flap gates just east of the five tide tubes near Bird Island. Raising even a single gate, however, drops the lagoon levels some two feet, contributing to a number of problems. Shallow feeding grounds used by shorebirds and wading birds become exposed, killing off the benthic organisms the birds feed on. Formerly productive shallows become dry land and allow intrusion by park visitors and their dogs, making adjacent shallows unusable by birds trying to feed and roost. A prime example can be seen along the western shore of the Main Lagoon near the southern end, just north of the clubhouse of the Berkeley Paddling and Rowing Club, historically the park's richest feeding grounds for shorebirds and wading birds. During longer, warmer days, this gate position contributes to higher water temperatures throughout shallow areas of the lagoon. These higher temperatures are the result of the position of that single flap gate and any blame for lower DO levels must be properly attributed. For water recreational users, the lower elevations bring underwater hazards a couple of feet closer to the bottoms of the kayaks and represent safety hazards created by the gate position. The purpose of the lower lagoon level is said to create additional room for non-permitted storm water storage during the rainy season, as it allows the two-lagoon system to receive some 120 additional acre-feet of contaminated storm water. There would be no apparent reason to keep the lagoon levels lower in the summer when high temperatures can become problematic, yet the flap remains in the up position, damaging shorebird feeding and roosting throughout the park.

Harvesting of Aquatic Vegetation: During many summers the City hires a contractor to remove the aquatic vegetation in the park. This action removes countless number of fish and other marine life as well as their primary food and shelter. The project proposal is said to improve the bird life by increasing the health of the fish habitat, so any project analysis must take into account this habitat destroying practice. As the 1994 Aquatic Park Water Quality Study points out, removal of the aquatic vegetation that absorbs nutrients found in the water, can lead to explosive growth of algae and the resultant negative impacts on water recreational uses, water clarity, and park visitors.

Storm weirs: In accordance with Water Board 70-14, the City of Berkeley is prohibited from discharging storm water containing waste into the Aquatic Park lagoon. Historically this was accomplished through a series of hand-operated weirs. The two weirs on the Potter Storm Drain were regularly closed off with every rainfall for many decades, but 10 years ago were removed in what was said at the time to be a temporary summertime experiment to improve the tidal circulation. There was no notice to Council or to the Water Board of this change. With the first rainfall, the damage to the biological resource became apparent, as contaminated storm water runoff now poured unimpeded into the park with each rainstorm. The visible aspect was the amount of trash brought in, but the additional damage was due to the other metal and chemical pollutants not readily visible. Higher lagoon flood levels since then have contributed to shoreline collapse as trails, utility lines, roadways, and vegetation have lost their solid ground and collapsed into the bay or along the shore. Damage is particularly visible along the entire eastern shore, where wind and waves during flood conditions have left a line of damage to the park and its infrastructure. Replacement of these two weirs on Potter, perhaps with automated, low-maintenance weirs should be studied, as they could block storm water without giving the City the ability / requirement to increase its non-permitted discharges.

The weir system on Strawberry has not been well discussed during the APIP process. Opening that storm drain to greater discharge into the lagoon was only added later in the process. A removable wooden beam controls the level at which storm water discharge to the lagoon occurs, as does a flap over a small opening, but there has been no discussion of when these actions take place or how they are decided. To be in compliance with the State of California San Francisco Bay Regional Water Quality Control Board's discharge prohibition, the EIR must study a gate that will be closed to all discharges, perhaps automatically. A weir that operates only one way, outbound from the lagoon to the storm drain is a simple structure that would increase circulation through the two-lagoon system, but would not allow prohibited toxic pollutants into the park.

Equalization tubes: When the long east-west dock separating the Model Yacht Basin from the Main Lagoon was filled to build a roadway, two equalization tubes were built to continue the flow of tidal water. They held manually operated gates on their southern sides in order to block the spread of contaminated water. These gates were removed, but not replaced. Any project proposal should include study of replacement of these gates. If the two pipes are replaced by a single, slightly larger pipe, this new pipe should have the same ability to control flow, perhaps on both sides to allow for continued operation while one is being repaired. This pipe should be sized to accommodate the expected increase in tidal flows, not to support the movement of prohibited storm water flows. If the EIR studies building a channel, spanned by a bridge to carry emergency vehicle traffic, the alleged benefits of this greatly increased expense should be weighed against its inevitable use to move polluted storm water runoff from the Potter Storm Drain into the Main Lagoon. That bridge must accommodate the telephone line that runs on the south side of Bolivar

Drive, the irrigation system for the City's wildlife habitat restoration project on both side of Bolivar, and other utility lines such as the electric conduit along the north side of Bolivar, which may have been abandoned.

The flow of tidal water through the existing equalization tubes makes both side of both tubes prime feeding grounds for wading birds in search of fish attracted by the flow. They also are prime destinations for visitors enjoying views of the water and birders who can see the egrets and herons feeding up close. Any channel should consider features that make it both bird friendly and incorporates visitor needs. Gentle, terraced slopes would allow the birds feeding along the shoreline to also feed and rest on the dry land as occurs along other nearby shoreline edges. Such terraces also allow birders to settle in along the shore, watching the birds with minimized impact. Native shoreline plantings should be incorporated to provide screening for birds feeding and resting along the channel. The bridge structure should acknowledge that this new wide opening (the consultant hydrologist has told the City it will need to be 25 feet wide, not 20) would be a primary flight route for the many birds that move regularly between the MYB and the Main Lagoon.

Storm Water Pipe Access Covers: The access covers to both the Potter Storm Drain and the techite "diversion" pipe have been used at time to discharge storm water along parklands. The EIR should consider options where these access covers are sealed, as was the case in previous years. This includes again solidly locking in place the covers of the "diversion" pipe, as well as locking in place the covers above the Potter Drain that are in the park. The easternmost cover has been replaced with a grated opening and the next one to the west has no locking mechanism whatsoever. This operational decision brings non-permitted storm water discharges pouring into parklands unimpeded. Collapse of the shoreline supporting the storm drain just north of the gated access opening shows the long-term damage being caused, as does the unrepaired collapse of the southern embankment of the Potter Street opposite the next unsealed access cover. The EIR should study the option where all access covers to Potter and the "diversion" pipe are again effectively sealed to prevent the discharge of storm water. It should also study the operational impacts of using the access covers as additional, uncontrolled storm water discharge valves. This would include infrastructure damages caused by the erosion of the shoreline, such as the collapse of the southern side of Potter Street and the collapse of the embankment that supports the Potter Drain, the sewage line, and irrigation and electrical lines running next to the currently gated opening.

Dredging: Increased circulation will increase the rate of sedimentation in the lagoons and ultimately destroy its value as deepwater habitat for the migratory birds that migrate through or overwinter each year. Staff dredging practices must be considered as part of the project EIR. The Aquatic Park Water Quality Study of December 1994 states, "Dredging would ultimately be necessary to prevent filling of the Main Lagoon and the Model Yacht Basin." (Page 1-4) Dredging has been done at only two locations since a major dredge of the Main Lagoon in the 1960's. Those spots are at the outlet of the Strawberry storm water overflow drain at the foot of

Addison Street and of the biologically rich mudflats near Bird Island. No biological benefits are obvious from the expensive work at these two locations and there may be negative habitat impacts from the historic disposal of the spoils on the western shore of the Main Lagoon, adjacent to the primary shorebird feeding grounds.

Pruning of Shoreline Vegetation: Feeding and roosting locations for aquatic birds and other wildlife are compromised by the City vegetation management practice of the removal of branches that provide screening along the shoreline, creeklets, and freshwater wetlands. The EIR must consider the impact of these practices; clean, non-polluted water in the lagoon that circulates well with the waters of the open bay is of limited value for wildlife when native vegetation is routinely removed without ongoing replanting.

Material Disposal: According to former City Manager Weldon Rucker, Aquatic Park is the dumpsite for the City of Berkeley. Historically the park's lands are used for long-term storage and disposal of materials no longer needed including soil, rock, green debris, wood chips, dredge spoils, scrap metal, and asphalt. The impacts of this function are inter-related with the habitat issues being studied in the EIR. Asphalt disposal along the shoreline of the southern two ponds – now currently on hiatus – exacerbates soil erosion and converts deep-water habitat to shallow waters subject to overheating during warm weather.

Sewage Discharges: Fecal coliform bacteria enter the lagoon not only from storm water runoff, but also from sewage pipes east of the lagoons that require modernization. The sewage pipe at the park's northern end, from the playground to Addison, was recently replaced with a new pipe, but the pipe at the southern end is blocked, potentially leaking raw sewage into the MYB. East of the railroad tracks, other pipes allowed to fall into disrepair leak raw sewage that reaches the Main Lagoon. During the project study period, the lagoon was closed to water recreation for several days during a leak of a City sewage pipe near the Bayer campus. Water recreation is a listed beneficial use of the lagoon and it was constructed with beaches at multiple locations, but in recent years the City has posted no swimming signs to prevent liability for not controlling the flow of sewage into the lagoon. The City Health Department keeps records of bacterial contamination in the lagoons; those levels and their impacts should be documented in the EIR.

Background Information

Fish: The fish at the park have never been studied. The actual habitat impacts of the existing tidal circulation patterns on the fish should be examined for confirmation through scientific observation. Claims of the toxicity of seasonally high water temperatures are not supported by fish deaths. Rather, it would appear that when shallow waters become too warm, fish easily swim to deeper, cooler waters. This seasonal migration is not limited to Aquatic Park, but occurs throughout the Bay and indeed throughout the world. Maintenance of adequate deepwater habitat within the lagoons should be a project goal. It would seem inappropriate to base a

circulation project on a theoretical threat that has not been observed to be a problem in reality.

On the contrary, during the project study period, there were three separate incidents where there were numbers of fish that died throughout the two-lagoon system at the same time. Each of these fish kills was said at the time by both City staff and wildlife biology consultants to be most likely caused by the sudden freshwater inflows during storms and the resultant loss of the fish's required levels of salinity.

No fish kills have been reported in the Radio Tower Pond, despite its compromised circulation and extremely shallow water. This week four great egrets and a dozen snowy egrets were observed feeding in the RTP, more than at any other location in the park. This was despite the many consecutive days of warm temperatures and the highly visible algal growth. The Radio Tower Pond also provides good fish hunting for pelicans whose numbers in the park are highest during the hottest weather. The Radio Tower Pond, which receives no direct storm water discharges, has had no documented fish kills.

It is storm water discharges that have been implicated in fish deaths, not high temperatures. Such actual habitat damage is a reason such discharges to the park have been permanently banned by the Regional Water Quality Control Board.

Aquatic birds: Few water birds are in the park in the summer. Most water birds are in the park in the winter months when high temperatures / low DO are not a problem. There has been no observed decrease in summer egrets. There has been no observed decrease in summer herons. There has been no observed decrease in summer pelicans. There has been no observed decrease in summer avocets. There has been no observed decrease in summer cormorants. These birds all eat fish, yet their summer numbers have not changed, regardless of the tidal circulation volumes.

The single observed change in bird population has been a large decrease in the number of winter egrets. Discharges of storm water into the shallow lagoons can be toxic to the fish and other marine life that egrets feed on.

Rooted Aquatic Vegetation: Removal of rooted aquatic vegetation was the primary reason given the first time that this proposal of opening up the storm drains into the park was studied in the Aquatic Park Water Quality Study in 1994. The recent consultant presentation to Council referred to the bad smells in the park from the decay of the vegetation as demonstration of the need for the project. During the APIP study process, the smells were explained as a natural process and that fact was to appear on interpretive signage for the public. The report summary of the 1994 attempt to widen the floodgates into Aquatic Park even states on page 1-3, "Interpretive signs could also be posted to inform Park user that the growth and decay of the rooted aquatic plants (and their production of odor) is a natural

process." In the section on "Water Movement and Quality in Aquatic Park" on page 3-1, the text goes on to clarify, "Rooted aquatic plants are beneficial for fish and some birds," and "Annual die-off of plant stems and leaves occurs in late summer and is a normal process for these plants." Perhaps more significantly, the rooted aquatic vegetation's use nutrients brought in by tidal circulation and by non-permitted storm water discharges. Their healthy presence "tends to control algae because they can outcompete algae for light and nutrients." (Page 3-3) The EIR must accurately characterize the relationships between rooted aquatic vegetation, algal growth, annual plant harvesting, and increased nutrient levels expected by greater tidal circulation and storm water discharge.

Dredging: Regular dredging of accumulated sediment is required in order to maintain the health of the lagoons as deepwater habitat. Dredging was a primary focus of the 1994 Water Quality Study, but it was taken off the table for discussion during the APIP process. That being said, the City hired contractors to dredge accumulated sediment and debris around the Strawberry Storm Drain Overflow Pipe at the foot of Addison Street during the planning process. The contract including dredging the rich aquatic bird feeding grounds between Bird Island and the five tide tubes, but this dredging is still pending. Dredging consideration should focus on creating safe, deepwater refuges for birds, not for speeding the discharge of storm water or for removing significant feeding grounds.

The APIP planning process mentioned "sediment traps" as part of the circulation project. These should be studied in the EIR or their rejection explained.

Disposal of dredging spoils can be expensive. Historically, the City has taken them to the bluff north of the Berkeley Paddling and Rowing Club for dewatering and then spread them on the site. Seasonal high water temperatures, particularly in shallow waters, have been stated as the primary reason this time for the proposal to open the storm drains to the park's lagoons. Increasing the tidal circulation will increase the rate of sedimentation. Higher lagoon levels due to higher tides or floodwater discharges will exacerbate shoreline collapse, reducing water depth adjacent to shorelines. The EIR must consider the interrelationships of sedimentation, shoreline collapse, shallow water, seasonal high water temperatures, and dredging to protect the long-term health of the deepwater habitat required by the migratory waterfowl.

Aquatic Habitat Limitations: The APIP Summary Report states, "A lack of water circulation and very small daily tidal volume are the main causes of poor aquatic habitat conditions." This statement forms the basis of the proposal to open up large storm water discharge valves into the park's lagoons, but it lacks supporting evidence. The lagoons are home to countless fish and hundreds of aquatic birds pass through and overwinter during the non-breeding season, with the existing circulation volumes. Fish-eating birds appear to find plenty of food, even during the periods when water temperatures in shallow areas briefly rise during heat waves. What evidence is there that tidal exchange limits habitat conditions? The park appears to support far more aquatic birds than the rest of the Berkeley bay shore,

despite higher water circulation in those locations. The EIR must accurately acknowledge the role of various limitations on the wildlife population.

Circulation volumes are cited as problematic because they can lead to seasonal high water temperatures. A secondary reason to open the storm drain connections to the lagoons is to more quickly clean out pollutants from the lagoons. Best Management Practices suggest that prohibiting the entrance of pollutants into the lagoons is preferable to attempting to clean out pollutants.

The NRMS itself deals extensively with a number of other conditions that reduce the aquatic habitat and there are other causes those consultants were not asked to study or comment on. Lack of native vegetative shoreline screening of feeding and roosting areas from visitor activity has been widely acknowledged in the NRMS and other studies. Degradation and loss of protected offshore roosts reduces safe refuges for water birds. Access to sheltered fresh water has been suggested as a cause of duckling mortality: the many creeklets are regularly shorn of their screening vegetation. Most significantly, non-permitted storm water discharges introduce a host of pollutants toxic to marine life. The fresh water discharges by themselves have been stated by consultants and staff as the probable cause of all fish kills during the project study period, because they alter they rapidly alter the salinity levels required by some marine life. Pollutants can bind to clay particles and enter the sediments, forming a permanent impediment to the health of the benthic organisms and the birds that depend on them for food.

Legal question: The City's legal department has stated that maintenance of the culverts has always been the responsibility of Caltrans. If the City wants to repair these pipes, state bond funding such as provided by the Coastal Conservancy may not legally be used. Further, any construction may then switch the maintenance responsibility to the City in perpetuity. Such issues must be addressed directly before Council agrees to make such a decision.

Three Additional Projects: The Notice of Preparation mentioned three projects for environmental review of which little description has been provided to date. It is difficult for the public to provide comments for projects that have not been clearly defined.

New storm drain outlet to Radio Tower Pond

The Water Board regulator for this project wrote in his initial project comments to the City on June 6, 2007 that, "Repair of the tide tube is preferable to a new connection between RTP and the Potter Street storm drain. Since the RTP does not presently receive storm water from Potter Street, it seems that maintaining current storm water inputs to the RTP would mean that no new connection to the storm drain system should be installed to the RTP." A floodgate on Potter that allows the City to discharge storm water containing waste into the RTP would likely be used to release flood waters. This project does not appear in the preferred "no discharge" project description approved by both Parks and Recreation Commission and the

City Council. The fact that it appears in the alternate staff recommendation that allows storm water discharge into the park indicates the project is designed to use the RTP as a storm surge basin. So does the proposal to build an earth berm around the radio station building tall enough to accommodate the release and temporary storage of flood waters, but far higher than any expected tidal levels.

In their presentation to the City Council, City consultants stated that the RTP has the worst water quality of the three ponds. There has been no documentation of this claim or explanation of the origin of this charge. The water quality of the RTP was not studied in the Aquatic Park Water Quality Study, as part of the NRMS, nor in any of the data published as part of the APIP proposal. The EIR must include analysis of all information about the pond's water quality that City consultants have studied or learned, including all data that has not yet been shown to the City Council or Water Board regulator.

The RTP receives no direct discharge of polluted storm water from the Potter Storm Drain, so by that primary measure it has the cleanest water of the three ponds. Observation of wildlife suggested that it supports a thriving ecosystem of aquatic life. Shorebirds regularly feed in its shallows, sometimes numbering in the hundreds. Last week, four great egrets and a dozen snowy egrets were all successfully feeding in the pond at the same time. Night herons feed in the pond's waters as well, and a great blue heron regularly feeds and roosts in the pond. Rays have been seen swimming in the pond and none have turned up dead, as is the case in the Main Lagoon and the RYB following rainstorms during the study period. Ducks nest successfully each year along the pond's edge. The large, flat, grassy peninsula at the pond's western end is a primary roosting site for a range of aquatic birds, including great egrets, snowy egrets, a great blue heron, Canada geese, ducks, and a range of other birds. So are the grassy, shoreline areas on the pond's southern shore. The line of posts from a former dock that run north to south along the pond's eastern shore are primary roosting sites for egrets, herons, and other aquatic birds. So are the mature Monterey Cypress trees whose branches overlook the pond, including those on the north shore, the single tree near the tide tube inlet, and those along the southern shore, although recent tree work has removed significant roosting trees and branches. Other tree work has removed the grove of trees formerly used for egret roosting on the pond's western slope; Caltrans is legally required to replace this vegetation that they removed when they realigned the Ashby onramp.

The biological heart of the pond is in its northwest corner where the remnants of Potter Creek reach the bay. There is a dense willow grove there that serves as a widely known group roost for black-crowned night herons of the region. During the non-breeding season, several dozen birds roost in the willow branches that hang out over the waters of the pond. Great egrets, snowy egrets, and a great blue heron, also roost in these trees. The grove is widely known for the large flock of red-winged blackbirds that at times fill the trees with a loud chorus of calls. Last winter and two winters before, a rare warbler typically seen only in the east made its home in the

willow branches, attracting hundreds of birders to the shoreline trail through the grove. Ducks have nested in the grove and adults bring their newly hatched ducklings to feed in the tangle of branches out over the water. The biological richness of this willow grove has been identified in other studies of the park and its significance has been mentioned in previous City grant applications.

The EIR must study any impacts on all of these roosting, feeding, and nesting sites, including the health of the vegetation when submerged in water. The impacts to vegetation of salt-water intrusion into areas that are now generally dry land should be considered. Impacts of all of the contaminants contained in Berkeley's urban runoff must be considered. So should the shoreline impacts expected by higher tidal levels and new flood levels.

The EIR must include study of all the interrelated water quality components to be studied in the other lagoons and all the expected impacts previously mentioned concerning storm water discharges into the Main Lagoon and the MYB. This includes the related impacts of runoff from the Caltrans right-of-way. One significant issue for this pond is the issue of water depth. What are the tidal levels expected? What are the expected lagoon levels during flood conditions when the capacity of Potter is increased by discharging polluted storm water runoff into the RTP?

An alternative project to be considered is dredging of the RTP to reduce water temperatures in hot weather and to create safe refuges for fish in those few days a year when shallow waters become too warm to hold sufficient oxygen for fish. The spoils have a logical place for disposal, the primary location where they originated – the northern slope of the pond. Unlocked access covers on the top of the Potter Storm Drain allow storm water during flood conditions to flow out the top of the pipe, and southward down this slope. This pond's northern slope – consisting largely of unconsolidated sand and loose soil – has collapsed over the years into the pond and been a primary source of the rapid sedimentation of the pond. If placed on the northern slope of the pond, the spoils can rebuild the collapsed hillside, form terraced seating for birders and other park visitors, and restored damaged shoreline trails.

The EIR must compare construction of the proposed storm water discharge valve with maintenance and better management of the existing tide tube. The gate that once controlled the flow of tidewater could be replaced and used to close off flow through the culvert when oil spills, red tides, or other water contamination occurs in the open bay.

Visitor impacts should also be considered in the EIR. In particular, the shoreline trail through the Potter Creek willow grove would likely be impacted by higher tidal levels and by higher floodwaters. Twice daily submerging of the trail would destroy its value as a natural bird blind. Even seasonal flooding with storm water would greatly reduce the trail's long-term sustainability through erosion, requiring significant staff labor or trail abandonment. The trail provides visitors an

opportunity to safely view dozens of resting night herons just a twenty feet from the trail, while viewing them from any other vantage point is hundreds of feet away.

The RTP ownership is shared between the City of Berkeley and Inner City Broadcasting Corporation and the EIR should study all impacts on the adjacent property owner's property. This includes any damage caused by higher tide levels and new flood levels to their property and its vegetation, its parking lot, the many bird roosts on their property, and the array of underground copper wires that radiate from the transmission tower and are a basic part of the propagation of the AM signals. The EIR should document the ownership issues and give some written proof by the owners showing they are aware of the likelihood of regular flooding of their property and the expected damages. The NOP mailing list did not immediately appear to show that they have been notified of the comment period.

Another party that requires NOP notification is Caltrans. They constructed the tide tubes and according to signed documents from Berkeley's legal department and presented to the Parks Commission, Caltrans has legal responsibility for maintenance of the tide tube to the RTP, the one to the MYB and the six culverts connecting the Main Lagoon to the open areas of San Francisco Bay.

By constructing an alternate method of tidal flow, and allowing Caltrans to abandon the culvert it has maintained since its construction in 1937, without requiring them to safely and cleanly manage the new gate, the City will be taking on a new maintenance responsibility in perpetuity. This financial impact on the City's budget, and the resulting reductions in other services in order to cover it, must be presented to the Council in order for them to make a decision that weighs all impacts.

Best Management Practices in the Watershed area that is directly tributary to the Aquatic Park lagoons

This project requires better description in order to elicit comments for environmental considerations, alternatives and mitigations. It is not obvious to what set of project it refers.

The APIP Summary Report on page 8 says, *"As an optional APIP component vortex filters could be installed on the storm pipes on the upslope/east side of the railroad berm at the Bancroft, Dwight, and Channing Street stormdrains and in the park to replace the oil/water separators on the Heinz, Grayson, Carleton, and Parker Street stormdrains. These filters would remove trash, large particulates, and oil and grease and would consist of a unit placed in the stormdrain as an in-line facility or next to the pipe as an off-line unit. The vortex filters would not remove the small particulates which transport many of the persistent pollutants; thus, this type of filter would not take the place of the biofilters but could provide treatment while the biofilter improvements are installed."* Are these the BMP's that are being studied in the EIR? While removal of trash and large particulates from the runoff would be helpful, it is not apparent that this system would remove all polluting waste materials from the storm water, and thus be in compliance with the Water Board Order 70-14.

If this is the project being studied, the EIR should consider how the vortex filters would be managed and maintained. The existing oil/water separators they are replacing do not function due to lack of maintenance and it is unclear how the Council could expect anything different from the new filters. The EIR should study the current filters and view the photos of their conditions as was presented to the public during the APIP planning process to assess if and how different management of the proposed vortex filters could be successful. If abandoned in place, as the current filters are, that impact over time must be acknowledged.

Or perhaps the project description in the NOP refers to the biofiltration methods mentioned on page 8 of the APIP Summary Report directly before the section that describes the vortex filters. *"The urban streets, parking lots, and buildings of the local watershed could be retrofitted with stormwater biofiltration facilities. Biofiltration facilities provide treatment of stormwater as it flows along streets and through parking lots and before it enters the stormdrain system. Biofiltration facilities provide a medium which can rapidly and effectively filter out trash and a high percentage of the fine sediment particles, bacteria, and nutrients, and biologically treat these contaminants. Biofiltration facilities have been found to remove 80 percent or greater of the total suspended sediments (TSS) from stormwater and therefore a high percentage of the metals, nutrients, pesticides, coliform bacteria, oil and gas, and other contaminants. For the Aquatic Park local watershed, design of these facilities will need to take into account soil conditions, rainfall amounts, land uses, utility and pipe systems, land ownership, and overall redevelopment planning. Additional stormwater facilities that could be included in the Aquatic Park local watershed are stormwater detention facilities such as cisterns and rain barrels, as well as residential and even commercial use of porous pavement, rain gardens, and grassy swales. All of these measures will need to be retrofit into the Aquatic Park local watershed to effectively filter contaminants out before stormwater reaches the lagoon system. This watershed is ultra-urban: it contains no open land and is almost entirely paved over."*

Various methods of water detention and biofiltration have great potential to reduce pollutant levels in the storm water runoff from the City of Berkeley. This limited description is too vague and all encompassing to elicit meaningful comments about areas of impact to be studied, alternative project proposals, and suggestions for project mitigations. The description itself suggests the complex array of impacts that its implementation will involve. Maintenance and management of these projects should be foremost. Storm water discharge permitting issues must also be considered. Are there impacts on traffic caused by these detention and filtration ponds? What about on neighborhood residents and employees? Will these ditches be fenced off to prevent access by the public? How would the remaining 20% of pollutants be handled – does the project proposal anticipate they be discharged into the lagoon without further treatment of the waste? Such discharges would appear to be in violation of Water Board Order 70-14.

Or perhaps the project description in the NOP refers rather to the text of the "West Berkeley Stormwater Biofiltration Proposal" dated July 11, 2008, which City staff submitted to the Water Board in a preliminary grant inquiry. According to the portion concerning the City's NPDES storm water permit, "The work described in this proposal will only take place within the City's public rights-of-way." The same concerns just mentioned would apply.

It should also be acknowledged in the EIR that any temporary detention of storm water east of the train tracks does not necessarily result in any improvement to the water quality of the lagoon. When the flow of storm runoff into the park from the immediately adjacent blocks are slowed or delayed, that reduces the water level of the lagoon and it allows for the increased flow of untreated runoff from Potter through the techite "diversion" pipe and from the two connections to Potter.

One alternative project to be considered in the EIR is the diversion of all tributary storm water from the adjacent watersheds out to the two bracketing storm drains where they will be piped to the open bay. This is the only option – aside from complete filtration of all storm water in a way that can be successfully managed and maintained in perpetuity – that is in compliance with both State orders and the environmental standards of the community. This diversion cannot take place within the park, as the techite "diversion" pipe – which actually worsens water quality by diverting water into the lagoons – demonstrates. It must occur through a series of smaller diversion pipes in the many blocks east of the park at higher elevations. And it only works if the two storm drains have adequate capacity to receive them, so this option should include a pumping system within the drains themselves, as mentioned by the hydrologist in the APIP presentation to City Council.

Construction of created wetlands at Bird Island using excavated soil from within the lagoons

This text refers to a project proposal that, to my knowledge, has never been presented to any group or in any report. This project requires better description in order to elicit comments for environmental considerations, alternatives, and mitigations. Since the only water at the island is EBMUD water, it would appear this project description must refer to tidal wetlands rather than freshwater wetlands. Would the wetlands be connected extensions of the island or freestanding mounds offshore of the island? What would their elevation be? How often would they be submerged and how often would they be dry? How would they be built? Would there be a constructed framework to hold the spoils in place and prevent them from eroding back into the deeper portions of the Main Lagoon? What types of toxics in the dredge spoils would be analyzed before use? What levels of those toxics would be permissible to use? Would the spoils be capped in any way? What habitat benefits would the City expect from disposal of the spoils in such a location? An option to be considered in the EIR is to use clean fill, rather than contaminated spoils. The EIR should address the fact that due to the size and elevation of the tide tube openings on the bay side that the park's lagoons have long periods of consistently higher tides and long periods of consistently lower tides. This tidal

regime makes creation of biologically healthy tidal wetlands in the park difficult to maintain because the tidal areas experience long periods of flooding and long periods of desiccation. What are the recreational impacts on water sports of creating these wetlands? Will these wetlands become invisible hazards for rowers, paddlers, and kayakers when under high tides or flood discharges at each end of the two-lagoon system? How would the water skiers be affected? Their dock and slalom course are around and immediately adjacent to Bird Island.

Perhaps the NOP had a typographical error and the word wetlands was actually intended to have been uplands; perhaps the City is proposing putting the spoils on top of Bird Island. Such an error calls into question the legal validity of the comment period on this proposal, since placing the dredge spoils on top of the island is a very different project from creating wetlands and this project should be re-circulated for comment. Raising the elevation of Bird Island through re-use of material excavated from elsewhere in the park has been mentioned before, but never through the use of contaminated dredge spoils. If this is the new project proposal being studied in the EIR, then many of the same questions mentioned in the previous paragraph apply. Would there be a constructed framework to hold the spoils in place and prevent them from eroding back into the deeper portions of the Main Lagoon? What types of toxics in the dredge spoils would be analyzed before use? What levels of those toxics would be permissible to use? Would the spoils be capped in any way? What habitat benefits would the City expect from disposal of the spoils in such a location? An option to be considered in the EIR is to use clean fill, rather than contaminated spoils.

What is the proposed height to which Bird Island would be filled? It would appear to have limited capacity to hold a large volume of dredge spoils. A tall mound may be able to accommodate a larger amount of the City's dredging spoils and thus have a cost savings for the City over paying for disposal at the required level of waste disposal site. But it may directly reduce the island's attractiveness for birds. What would the edge of the island look like under this proposal? Would it be a steep and tall riprap levee difficult for ducks to mount? The gentle, naturalistic, planted shoreline of the park's lagoons is a reason why birds live in the park, rather than in along the steep, unplanted riprap along much of Berkeley's shoreline with San Francisco Bay. The EIR should consider options that make the island's shoreline bird friendly and that accommodates their habitat needs.

What is the source of the spoils? Would it use the pile currently being stored on the western shore? Would it be from new dredging? Or would the fill instead not come from dredging as mentioned in the NOP, but be excavated from the City's longtime disposal site on land north of the Berkeley Paddling and Rowing Club. This is the only source of fill ever discussed in the APIP process. The EIR should consider variations in the location and depth of new dredging of the lagoon, as dredging in the lagoon was explicitly excluded from discussion in the APIP study process. Dredging of the Water Ski Club's slalom course might be beneficial as it could reduce

the growth of aquatic vegetation along the one area of the park they use. It should also analyze the project using clean fill as an option.

Would all manmade structures be demolished, removed from the island, and properly disposed of? Does the project proposal call for abandoning and burying any of it on the island? If asphalt is abandoned and buried under the dredge spoils, what impacts might it have on the vegetation to be planted above? What planting scheme is anticipated? Islands play a special role as safe roosting and nesting spots for aquatic birds, and the tree planting should account for the specific nesting needs of the egrets and herons, which have groups roosts in the park, but whose breeding adults currently leave the park each spring to wooded islands elsewhere for nesting. Egrets and herons in the park generally roost in Monterey Cypress branches that hang out low over the water. The report should consider options that plant the entire shoreline of the island in Cypress trees at low enough elevations so that the branches of the trees grow out just above the water. Such planting has the added advantage of creating safe harbors for ducks and other aquatic birds to feed and rest.

The EIR should consider the recreational impacts of this project, if indeed that is where the City is attempting to dispose of its spoils. In particular, the Berkeley Water Ski Club currently has a lease to use the island, although they have expressed a willingness to cede the island from their leasehold if the City wishes to convert it to nesting for egrets and herons. How would the water skiers be affected? Their dock and slalom course are around and immediately adjacent to Bird Island and they have used the island for decades for tournaments and other events.

What is the installation and management plan during the project's first several years while the Cypress trees are being established? Would the existing EBMUD pipe be used for irrigation? How would the caretakers of the island's vegetation reach it for controlling invasive non-native plants? There is an existing bridge that can be swung into place, but the Berkeley Water Ski Club may own it and it may require use of a boat to swing it into place. Would the island have a simple dock for use by staff / habitat management crews? What would be the fate of the existing bridge once the island no longer needs regular management visits? The utility of the island for safe resting and nesting of aquatic birds depends on the island being completely surrounded by water and inaccessible to predators. The EIR should consider how and when the bridge would be permanently removed and how staff would access the island for emergencies thereafter. Would the eventual removal of the bridge impact the water skiers?

Lower cost disposal of dredge spoils is one purpose that is clearly being met by this proposal. In fact, disposal of the spoils is really all that is mentioned in the project description in the NOP. Reuse of dredge spoils on or near Bird Island must be compared to reuse at other locations throughout the park. Planning studies for decades have called for re-contouring portions of the park to improve its habitat value and visitor features. Birds feeding and roosting along shoreline areas could be

better buffered from visitor impacts if earth berms, capped with clean fill if required by contaminant levels and planted with native vegetation, were constructed between the shoreline and visitor trails and activity areas. In wider areas, the park can accommodate larger, taller berms that are constructed between the shoreline footpath and the paved trail / roadway. In fact, during the planning process for a "living wall" earth berm along the park's west side to buffer freeway noise, the final alignment called for a long, tall berm in the very area where the current spoils have been dewatering for nearly two years. The EBMUD interceptor sewer line crosses under the freeway edge there, limiting the ability for the City to construct the earth berm sound wall along the right-of-way line. The final berm alignment was just east of the EBMUD sewage line and paved road, but west of the shoreline trail, creating a long, sheltered area for visitors to watch birds at the primary shorebird feeding area, while being buffered from the freeway noise. A key feature of the berm was that it would be built with a long, gentle slope, parallel to the freeway, such that it would accommodate a footpath and seating along its entire length and create a high overlook of the shorebirds at that end of the lagoon. Another location where very large amounts of dredge spoils could be disposed of is on the east side of the park, west of the end of Heinz. A very large berm built against the railroad berm could accommodate many birders overlooking the egrets and herons feeding at the park's southern end with no disturbance to the wildlife. This berm is detailed in the Aquatic Park Master Plan and came very close in scoring to receiving funding by the City's PERS refund park's projects. There are other shoreline areas throughout the park that could receive dredge spoils constructed so that the berms support layers of buffered visitor seating terraces on the water side of the berm and shelters the birds and bird watchers from disc golfers, dog walkers, cyclists, and other traffic on the adjacent paved trail.

An option to be studied is to use the spoils in the Main Lagoon not to create wetlands, but to create new islands to complement Bird Island. Islands play an incomparable role for safe roosting and nesting of aquatic birds, as they do not allow easy access for predators. And while Bird Island has been designated to be planted out with Monterey Cypress trees for roosting and nesting by the park's iconic egrets and herons, other islands could be covered in low vegetation or grasses to support ducks or other birds. As with the Bird Island project, the option of using clean fill should also be explored.

Base line and Post-Construction Monitoring

Extensive base line monitoring was proposed when the project to widen the storm drain outlets into the lagoons was first prepared for the Aquatic Park Subcommittee in June 2007. The Water Board's regulator recommended additional studies. The Aquatic Park Water Quality Study of December 1994 was the first attempt by the City to open these large storm water outlets into the park. The stand-alone Appendix D is a project Operational and Management Plan and all its elements should be considered by the EIR, including its monitoring plan.

Options for Alternate Projects and Mitigations

The 1994 Aquatic Park Water Quality Study resulted in a decision to not widen the connections to the storm drains due to the negative impacts of storm water discharge on wildlife. City Council chose instead regular maintenance of the existing system, with repair or replacement of needed parts. The project EIR should consider this as an option besides the "no project" option. This includes replacement of the original MYB storm water gates with no increase in culvert size. It includes a return to the annual cleaning of marine growth from all pipes so that tidal flow is maximized.

This option should also include repair of the original gates on the equalization tubes between the Main Lagoon and MYB. If the equalization tubes are replaced by a single, larger pipe, make sure it is possible to close it to prevent the spread of contaminants. Under this option, any connection between the Model Yacht Basin and the Main Lagoon would be with a pipe sized for tidal flow only, rather than a channel sized for carrying floodwaters. If the equalization tubes are replaced by a narrow channel only wide enough to handle increased tidal flows, it should be built with a mechanism to block flows as originally existed.

The APIP project discussion mentioned gates on the tide tubes that could be sealed closed in the event of an oil spill, red tide, or other contamination in the bay. The current flap gates on the five tide tubes in the Main Lagoon are not able to do this and the gates on the tubes to the MYB and the RTP are missing and their replacement should be considered.

Study all one-way outbound options, as requested by the Water Board regulator in his initial project comments to the City June 6, 2008. This includes the one-way outbound to Strawberry (The concrete wall limiting flow is replaced with a uni-directional weir, instituting a south to north flow through the system), one-way outbound to Potter (with either current size openings or with larger openings) and both options together. Depending on the option, the connection between the Main Lagoon and the MYB could be a narrow channel or a suitably sized pipe.

Armoring of all tide tubes, not just the five at Bird Island should be studied. Why would the City abandon the circulation pipes for the two southern ponds? These bay openings should all be designed with mechanisms to seal them shut in case of a toxic spill; the current flap gates do not serve that function.

BMP's should also be installed for runoff from I-80, which is piped into the lagoons. The City spent over two years working with Caltrans engineers to come up with a design concept for a swale just east of the freeway which would catch and filter storm water runoff and direct it southward for pumping to open lands in the middle of the Ashby interchange.

Possible Mitigations: The APIP planning process produced a number of proposals to improve the habitat value of the park for the aquatic birds. The only projects that remain are those that use the lagoon for flood control or the area near Bird Island

for disposal of contaminated dredge spoils. Without any vote of the Council, those other habitat proposals have been dropped from environmental review so they cannot be directly compared with the hydrology proposals as to risks and benefits. Any hydrology project will likely trigger negative impacts on the waterfowl, so those other proposals should be installed as project mitigations, if not studied directly as project alternatives, as the commissioners were assured by staff they would be.

Shoreline planting: Plant all shorelines aside from visitor seating terraces / wildlife overlooks with Monterey Cypress trees, with their lower branches allowed to remain untrimmed, to replace roosting for egrets and herons, lost to higher lagoon levels and the resultant shoreline collapse. The shade provided by these plantings will help keep water temperatures cooler in shallow shoreline areas. Dense plantings out over the water also creates ideal roosting and feeding for many aquatic birds. Native shrubs planted inland from the shoreline trees will also increase safe refuge for water birds by discouraging entry for people and their dogs. In some areas, initial shoreline armoring to replace collapsed riprap edging may be required to support the trees and keep them from damage by higher waves due to increased lagoon levels from tides, floods, and sea level rise.

Enhancement of existing offshore roosts for water birds and construction of new ones: Higher lagoon levels mean frequent inundation of the safe, offshore roosts that currently serve as primary refuges for the parks water birds. This consist of bare islands with no vegetation, islands with only low vegetation that provides clear sightlines, rocks, and a host of manmade objects such as posts from collapsed docks, abandoned jetties, and collapsed shoreline riprap that now stands surrounded by water. Higher lagoon levels brought on by greater tidal exchange and floodwater discharges will mean the loss of these offshore roosts at the exact times they are most required. Such roosts can be rocks, jetties, floating chained rafts, or constructed in a host of other ways. A project that was almost constructed as mitigation for the pedestrian / bicycle bridge over I-80 was creation of low islands by digging a moat to separate low-lying shoreline from the mainland. Such islands are easy to build and have enormous potential as safe roosts.

Shoreline visitor seating: The Coastal Conservancy told the City that they would be willing to fund at least three major shoreline wildlife overlooks as part of this project, and more if the City could make the case that this consolidated seating would improve wildlife habitat. Indeed, visitor disturbance of aquatic birds was well documented in the NRMS. Birders, ironically, are primary disturbers of the birds. By consolidating visitors into terraced seat walls that accommodate many visitors at once, their impact on the resource is reduced. Their impact on the waterfowl can also be reduced if the seating is built into the landscape and buffered with vegetation from the immediate shore.

Planting along fresh water resources: Aquatic birds, such as parent mallards with ducklings in tow, seek fresh water along the park's east side. Any project that seeks to promote the health of these birds must include safe refuges along the

freshwater creeklets and the freshwater marshes through dense planting of native vegetation to create screening for the birds from park visitors. This planting plan should also provide screening for field areas that are seasonally wet along the park's eastern side; these fields are primary feeding grounds for egrets and herons, particularly during the rainy season.

Pumping of storm water: Pumping of flood water out to the open bay are said in the Storm Water Master Plan to be required to avoid deep flooding of the park during storms if the capacity of the storm drains is increased by diverting water to the park. The EIR should study not only pumping through a new pipe, but also pumping through smaller pipes inserted into the existing storm drains. This is the mitigation presented to Council at its recent presentation. It is also part of the Berkeley Fire Department's Saltwater Emergency Fire Protection Program.

Documents to Study

Water Board Order 70-14: The EIR must study options that conform with existing legal requirements prohibiting storm water discharge into the lagoons from all connections to the two primary storm drains and from the local watershed.

City of Berkeley Storm Drainage Master Plan by CH2M HILL

Aquatic Park Water Quality Study by CH2M HILL, 1994: This document contains analysis of storm water pollutants, sediment contaminants, and describes many interrelated issues that impact water quality.

Aquatic Park Natural Resource Management Study

Project comments submitted to the City by Water Board regulator Brian Wines, June 2007

Water quality data on storm water entering Aquatic Park from the West Berkeley watershed was collected from 2006 through 2008 by the City of Berkeley in preparation for the Water Quality Improvement Project at Aquatic Park: This data was mentioned in a City stormwater biofiltration proposal to the Water Board dated July 11, 2008, but has not yet been presented to the public. It should appear in the EIR for a complete understanding of the impacts of any project that allows for the discharge of storm water containing waste into the Aquatic Park.

Park contour and flooding mapping: As part of the recent study, the City had a complete survey of the park conducted which shows expected flooding scenarios based on various floodgate sizes and operation. This mapping should appear in the EIR so the public can accurately assess the results of increasing the capacity of the City's storm drains by temporarily storing flood waters in Aquatic Park. City Attorney's written project analysis that indicated if new floodgates are built, that the City might have a legal liability to operate them for flood control.

West Berkeley Stormwater Biofiltration Proposal dated July 11, 2008, which City staff submitted to the Water Board in a preliminary grant inquiry.

City of Berkeley Fire Department's Saltwater Emergency Fire Protection Program: BFD has long sought a backup system to fight fires in the event of catastrophic failure of water pipes. This system is said to utilize bay water pumped through the storm drains. The department is said to be planning construction of a building to house their pumping equipment for this system in the vicinity of the Potter Storm Drain near Ninth Street.

Waterbird Population and Disturbance Response Study, May 12, 2005 by Avocet Research Associates: This study proposes dense native planting along the shoreline areas to provide screening between park visitors and the birds feeding and roosting along the shore. A minimum depth of 10 meters of vegetation is recommended.

Aquatic Park Master Plan, 1989, Michael Painter and Associates

Previous project reports by the LMA project team. June 2007 to the Aquatic Park Subcommittee, later report to that committee, report to full commission, three reports to Council, such as the APIP Project Description January 23, 2008. All proposed project variations should be analyzed and any proposed project studies and monitoring mentioned should be incorporated into the EIR or specifically rejected with the reasons they are being discarded.



July 27, 2009

Via U.S. Mail & E-mail

City of Berkeley
Dept. of Parks, Recreation & Waterfront
ATTN: Deborah Chernin
2180 Milvia Street
Berkeley, CA 94704
Email: DChernin@ci.berkeley.ca.us

RE: Comments regarding the scoping of the Aquatic Park Environmental Impact Report

Dear Ms. Chernin:

I am writing on behalf of the Golden Gate Audubon Society and its more than 10,000 members and supporters regarding the scope of the planned Environmental Impact Report (EIR) for alterations to Berkeley's Aquatic Park. Golden Gate Audubon is dedicated to protecting Bay Area birds, other wildlife, and their natural habitats. We conserve and restore wildlife habitats, connect people of all ages and backgrounds with the natural world, and educate and engage Bay Area residents in the protection of our shared, local environment. Our members use and enjoy Aquatic Park and are concerned that EIR fully consider all reasonably anticipated impacts to birds, fish and other wildlife and the habitat provided by the park.

We hope that through this process the City will begin to better appreciate the valuable habitat provided by Aquatic Park. In the past, habitat value has never been a consideration in management of water flows in Aquatic Park: the "main tide tubes" have not been routinely maintain and unclogged; stormwater filtration vaults to the east of the main lagoon have never been maintained in the decades since they were installed; a culvert connecting Aquatic Park to the Bay was allowed to completely fill in; and the culvert connecting Radio Tower Pond to the Bay has almost completely filled in.

The EIR must fully consider the ecological values of the park, not merely its potential to drain run off from Berkeley's streets. It must be comprehensive and describe each alternative in sufficient detail to allow for analysis by the public. The EIR should consider the potential impacts of not only construction at the park, but also the effects of ongoing operation and management, especially if Aquatic Park is to be used to drain storm water flows from West Berkeley.

A. The EIR Should Consider Effects of the Proposed Alternatives on Birds and Other Wildlife.

During the spring and fall bird migration season, Aquatic Park's lagoons are heavily used by migrating birds, whose habitat has been greatly reduced by a over 150 years of development along the Bay. The EIR must full consider the potential impacts from each of the alternatives on the birds and other wildlife that rely on the lagoons. To do so, the EIR must include baseline data on the species, abundance, and seasonality of birds in the Park.

We believe that because of the importance of the lagoons to migrating birds, including endangered species, degradation of water quality during the migrations cannot be offset by water quality improvements during other times of year, no matter how great those improvements might be. Currently,

GOLDEN GATE AUDUBON SOCIETY

2530 San Pablo Avenue, Suite G Berkeley, California 94702

phone 510.843.2222 fax 510.843.5351 web www.goldengateaudubon.org

Ms. Deborah Chernin
 July 28, 2009
 Page 2 of 3

the most acute water quality problems observed at the park generally occur in summer: water temperatures become elevated and algal blooms and die-offs reduce the level of dissolved oxygen, occasionally to levels that are fatal to fish and other marine creatures. While some of the City's proposals may improve water quality during the summer, they may have deleterious effects on birds and other wildlife during the winter, spring, and fall. Any assessment of the benefits to water quality should include a season-by-season analysis, complete with a study of the effects of different storm sizes and rainfall scenarios.

Therefore, the EIR must consider the effects of changes to the salinity, temperature, oxygen levels, and pollutant concentrations in the lagoon and potential impacts of those changes on birds, other wildlife and their habitats in the lagoons. Some pollutants will remain suspended or dissolved and will be flushed from the lagoons via tidal cycles, but others will settle into the sediment. The EIR should consider the concentration and rate that pollutants will flush out and/or settle into the lagoons and whether those concentrations can become toxic to marine organisms and work their way into the food chain. All of this must be compared with current conditions.

Finally, this process provides an opportunity for the City to improve the natural habitat values of Aquatic Park. It should consider review of alternatives to improve the Park's habitat, including: (1) removal of invasive, non-native plants; (2) planting of native plants; and (3) improvements to encourage bird foraging, loafing, roosting, and nesting. And projects at Aquatic Park should result in a net improvement of habitat for birds and other wildlife.

B. The EIR Should Fully Consider Storm Water Flows and Their Potential Impacts.

Based on our review of available documents, it appears that the preferred alternative, and most other projects being considered, would greatly increase the amount of flow from the Potter Street Culvert into the Model Yacht Basin, and thereby into the Main Lagoon. Some project variations would allow this flow to be reduced or eliminated during storms, to prevent polluted city stormwater from entering the lagoons.

The EIR should anticipate that the maximum amount of stormwater may be allowed to enter the lagoons. We understand that there is considerable pressure to reduce flooding in West Berkeley by channeling more storm water to the lagoons. Increase storm water flows will alter the salinity of the lagoons and will introduce significantly greater loads of pollutants as they run off of Berkeley's streets (including lead, copper, oil and grease, pesticides, bacteria, other wastes).

Therefore, the EIR should investigate (1) the reduction in salinity from stormwater entering the lagoons; (2) potential impacts, including illness or death, to shellfish, fish, or other marine organisms; and (3) other hydrologic changes in the lagoons due to the influx of fresh water, including the possibility that the incoming stormwater will form a layer over the salt water in the lagoons, that will prevent exchange of oxygen into the lower layers and thereby harm marine life.

C. The EIR Must Consider Climate Change and Sea-Level Rise.

Within twenty or thirty years, sea level will be substantially higher. The duration during which the water level in the Bay is lower than the level in the lagoons will be reduced, so the amount of water exchange with each tide cycle will also be reduced. This effect should be quantified, and, if the reduction in tidal flow will be very severe, the implications of this finding should be discussed.

Ms. Deborah Chernin
July 28, 2009
Page 3 of 3

D. Conclusion

Golden Gate Audubon believes that there are several proposals that could improve water quality in Aquatic Park and improve habitat for birds, other wildlife, and their habitat. We ask that the City fully consider the impacts of changing water flows into the lagoon and ensure that the park's value to birds and other wildlife increases with the implementation of this project.

If you would like to discuss these comments or any other issue further, please contact me at (510) 843-6551. Thank you for your consideration.

Sincerely,

A handwritten signature in cursive script, appearing to read "Michael Lynes".

Mike Lynes
Conservation Director



DEPARTMENT OF PARKS AND RECREATION

Diablo Vista District – 845 Casa Grande Road, Petaluma, CA. 94954

(707) 769-5652 ext. 208

Ruth G. Coleman, Director

July 23, 2009

Ms. Deborah Chernin
City of Berkeley
2180 Milvia Street
Berkeley, CA. 94704

Re: Berkeley Aquatic Park Hydrology and Habitat Improvement Project
Notice of Preparation of Draft Environmental Impact Report
SCH# 2009062093

Dear Ms. Chernin:

California Department of Parks and Recreation (DPR) is in receipt of the Notice of Preparation (NOP) for the Berkeley Aquatic Park Hydrology and Habitat Improvement Project draft Environmental Impact Report (EIR). DPR owns Eastshore State Park (ESP), directly west of Berkeley Aquatic Park and Interstate 80. The park is operated by East Bay Regional Park District.

The tide tubes that connect the lagoons of Berkeley Aquatic Park to the San Francisco Bay outflow into ESP. Therefore it is likely that the proposed rehabilitation of these tide tubes will either directly or indirectly affect State Park land and/or aquatic State Park land. Eliminating the inflow of stormwater runoff to the lagoons from the Strawberry and Potter Street storm drains could also have an effect on ESP if increased stormwater is directed to outflows in ESP.

California State Parks looks forward to being involved in this project and the preparation of the EIR, in particular for the effects that the project may have on Eastshore State Park. Please don't hesitate to contact me with questions.

Sincerely,

Cyndy Shafer
State Park Environmental Scientist

cc: Brad Olson, East Bay Regional Park District
Clarissa Sampaga, California State Parks Natural Resources Division
DPLA Environmental Review Unit, California Department of Water Resources
State Clearinghouse



2950 PERALTA OAKS COURT P.O. BOX 5381 OAKLAND CALIFORNIA 94605-0381
T. 1 888 EBPARKS F. 510 569 4319 TDD. 510 633 0460 WWW.EBPARKS.ORG

APIR EIR Combined - pg 255
East Bay
Regional Park District

July 13, 2009

City of Berkeley Department of Parks, Recreation & Waterfront
ATTN: Deborah Chernin
2180 Milvia Street
Berkeley, CA 94704

**Re: ESSP/ City of Berkeley/Notice of Preparation (NOP) of an
Environmental Impact Report (EIR) for the Berkeley Aquatic Park
Hydrology and Habitat Improvement Project**

Dear Ms. Chernin:

East Bay Regional Park District (EBRPD) is in receipt of your NOP dated June 24, 2009 regarding the Berkeley Aquatic Park Hydrology and Habitat Improvement Project. Together with the State of California Department of Parks and Recreation (DPR), our agencies jointly own fee title to the shoreline property west of Interstate 80 between Ashby and University Avenues. Should your project necessitate accessing our property for rehabilitation of tidal tubes or other related purposes, the City of Berkeley will need to seek an encroachment permit or right of entry from EBRPD acting as Trustee on behalf of DPR and EBRPD. You can contact me at: EBRPD, P.O. Box 5381, Oakland, CA 94695, (510) 544-2610. Thank you for the opportunity to comment on the NOP.

Sincerely,

Elizabeth N. Musbach
Senior Real Estate Representative

cc: N. Wenninger, EBRPD Land Acquisition Manager
L. Tong, EBRPD Interagency Planning Manager
D. Wrightsman, DPR Senior Land Agent

Board of Directors

Ted Radke
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John Sutter
Ward 2

Whitney Dotson
Ward 1

Ayn Wieskamp
Ward 5

Pat O'Brien
General Manager

Chernin, Deborah

From: Norman La Force [n.laforce@comcast.net]
Sent: Sunday, July 19, 2009 5:28 PM
To: Chernin, Deborah
Cc: 'Michael Lynes'; 'Mark Wether'; 'Laura Baker'; 'Juliet Lamont'; 'Citizens for East Shore Parks'; 'Robert Cheasty'; 'Arthur Feinstein'; 'Brian Parker'; 'David Tam'; 'Ed Bennett'; 'Eric Folmer'; Jerry Kent; 'Joanne Drabek'; 'Kent Lewandowski'; Kitty McLean; 'Larry Kolb'; 'Peter Rauch'; 'Sylvia McLaughlin'; Teddi Baggins; 'Thomas Harper'; 'Angela Braren'; Olds, Betty; 'David Lewis'; 'Doris Sloan'; 'Eli Saddler'; 'Ellen Barth'; 'Ken Bukowski'; 'Kitty McLean'; 'Mark Liolios'; 'Nancy Strauch'; 'Norman La Force'; Donald, Patricia; 'Peter Weiner'; 'Phillip Price'; 'Rich McClure'; 'Rich Walking'; 'Samantha Murray'; 'Stana Hearne'; 'Steven Granholm'; 'Vicki Lee'; 'Whitney Dotson'
Subject: Scoping Comments from Sierra Club on Aquatic Park Hydrology and Habitat Improvement Project

Dear Ms. Chernin:

The Sierra Club makes the following comments on the scoping for the Aquatic Park Hydrology and Habitat Improvement Project DEIR.

The Sierra Club is very concerned about any impacts from the project on the rafting birds that use Aquatic Park as a resting and refuel site on their migrations. The DEIR should first provide baseline information as to the type of birds that use the site, periods of the year for such use, what the uses are, and the reasons for using the park. The alternatives should then determine the impact on this baseline population.

The DEIR should then analyze how the proposed changes in the hydrology of the project will affect the birds in terms of ability to feed, rest, raft, and carry out any other activities. The DEIR should then also determine the long term impacts of any change to the hydrology,

The DEIR should also analyze and quantify the nature of the run-off that would be discharged into the waters of the park, the amount of heavy metals, the amount of feces and other excrement, and the nature and amount of other pollutants. The DEIR should assume as one alternative that the city fails to maintain the culverts as required so we can determine the impact on the bird populations if the city fails to the culverts. This I very important because if the culverts are not properly maintained, then the toxins and pollutants from the storm drains that will be discharging into the park lagoon.

Currently, the Water Board order bars the city from discharging storm water into the park lagoon. The DEIR needs to provide the full legal and factual background for the Water Board's order and explain why proposed actions are not in violation of the existing order or orders.

The DEIR should discuss and analyze a range of storm water scenarios to determine

the quantity of pollutants will be discharged into the park lagoon under different storm water conditions and what the impacts could or would be on rafting birds.

The DEIR should analyze the quantity, character, and long term impact from pollutants that will remain the park lagoon either in the water, but more likely in the bottom sediment. The document needs to analyze how those quantities could change over time and what removal methods will be used to remove them in the future, and the impacts of those removal methods on the park biota and the rafting birds.

The DEIR needs to analyze the potential water quality impacts from various discharges and the long term impacts on water quality not only for the park lagoon but also for the Bay itself, and the adjacent wildlife areas that make up the East Shore State Park, especially the area around the discharge point for Strawberry Creek a the Brickyard cove area.

The DEIR should have a range of alternatives that includes those which allow some flooding of adjacent city areas, so the public and decision maker can understand the true nature of any storm or flood events.

The Sierra Club joins in the comments of other commentators on the scope of this DEIR. I request that I be notified of any public hearings or meetings and the release of any public documents about this EIR and that such notices be sent both via email and pmail to the following addresses:

Email: n.laforce@comcast.net

Pmail: Norman La Force, 802 Balra Drive, El Cerrito, CA 94530

Thank you,

Norman La Force,
Chair, Sierra Club San Francisco Bay Chapter
Telephone: 510-295-7657



July 2, 2009

City of Berkeley
Department of Parks, Recreation & Waterfront
ATTN: Deborah Chernin
2180 Milvia Street
Berkeley, CA 94704

Subject: Notice of Preparation for the Berkeley Aquatic Park Hydrology and Habitat Improvement Project EIR

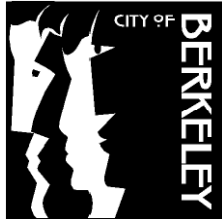
Dear Ms. Chernin:

On behalf of the San Francisco Bay Trail Project, I am writing to submit comments on the Notice of Preparation (NOP) for the Environmental Impact Report (EIR) for the proposed Berkeley Aquatic Park Hydrology and Habitat Project (Aquatic Park Project). The Bay Trail Project is a nonprofit organization administered by the Association of Bay Area Governments (ABAG) that plans, promotes, and advocates for the implementation of the Bay Trail. The Bay Trail is a planned 500-mile continuous network of multi-use bicycling and hiking paths that, when complete, will encircle San Francisco and San Pablo Bays in their entirety. It will link the shoreline of all nine Bay Area counties, as well as 47 cities. To date, 293 miles of the proposed Bay Trail system has been developed.

Within the Aquatic Park project area, there is an existing Bay Trail segment that stretches along the shoreline from University Avenue to Ashby Avenue. Although it is unclear from the NOP whether or not this existing Bay Trail section will be impacted by the proposed project, it is clear that portions of the project will occur within the footprint of the existing Bay Trail.

As such, the EIR should analyze the impacts of the Aquatic Park Project on the existing Bay Trail and identify mitigation measures for those impacts. The EIR should pay particular attention to and evaluate the potential impacts on the usage of the existing Bay Trail during construction. When analyzing the potential impacts to the Bay Trail, the EIR should look at criteria that include, but are not limited to, visual quality, aesthetics, noise, air quality, visual access, physical access, and the public nature/feel of the Bay Trail. As part of the analysis, the EIR for this project should incorporate a discussion and evaluation of how the Aquatic Park Project will be consistent with the adopted Bay Trail Plan and Policies, Bay Trail alignment, and Bay Trail Design Guidelines.

Appendix A3 Second Notice of Preparation



Planning and Development Department
Current Planning Division

Notice of Preparation of an Environmental Impact Report & Notice of Scoping Meeting

DATE: October 19, 2011

TO: Responsible Agencies, Agencies with Jurisdiction by Law, Trustee Agencies, Involved Federal Agencies, and Agencies/People Requesting Notice

FROM: City of Berkeley
Department of Parks, Recreation & Waterfront
ATTN: Deborah Chernin
2180 Milvia Street
Berkeley, CA 94704
Fax: (510) 981-6710

RE: **Recirculated Notice of Preparation (NOP) of an Environmental Impact Report (EIR) and Notice of Scoping Meeting for the Berkeley Aquatic Park Improvement Program (APIP)**

The City of Berkeley (Lead Agency) will prepare an EIR for the proposed Berkeley Aquatic Park Improvement Program (proposed project). The City requests your comments as to the scope and content of the Draft EIR.

The City of Berkeley previously issued an NOP for the proposed project on June 24, 2009. The purpose of recirculating the NOP is to solicit additional comments that may have arisen during the time that has lapsed since the original NOP was circulated. The scope of the proposed project and the alternatives has not substantially changed since the original NOP was circulated. The NOP is being recirculated to facilitate public disclosure and participation. This revised and recirculated NOP will be redistributed to all the public agencies, individuals, and organizations that were sent the original NOP on June 24, 2009.

Project Description: The project site consists of Aquatic Park (Park), located on the western edge of the City of Berkeley, adjacent to Interstate 80 between Ashby and University Avenues. Aquatic Park encompasses 99 acres and includes three separate lagoons, totaling 68 acres, which support a variety of wildlife, including fish, invertebrates, and birds. The Park consists of 68 acres of aquatic habitat in the three lagoons, 0.7 acres of salt/brackish wetland, 1.1 acres of freshwater wetland, 11 acres of lawn, 7 acres of roads and trails, and 14 acres of buildings and uplands. The Park is also used for active recreation such as waterskiing, rowing, kayaking, bicycling, hiking, and bird watching. There is a disc

golf course as well as a children's playground within the Park. The three lagoons consist of the Main Lagoon, the Model Yacht Basin, and the Radio Tower Pond, from the north to the south, respectively.

The Aquatic Park Natural Resource Management Study (NRMS) was prepared in 2003. The NRMS recommended improving water quality in the three lagoons by increasing water circulation, primarily through better tidal exchange, and improving wetland habitat areas. In 2006, the City prepared the Aquatic Park Improvement Program, which included concept-level designs for the major recommendations in the NRMS. The APIP analyzed and modeled 14 potential scenarios for achieving the goals identified in the NRMS. Based on the data collection, concept design, constraints and opportunities analysis, and model analysis, APIP Alternative 4B (No Additional Stormwater) was selected as the preferred alternative for the hydrologic component of the APIP. As discussed below, this scenario will be evaluated in the Draft EIR as an alternative to the proposed project.

Subsequent to the release of the APIP, the City's Parks and Recreation Commission (P&RC) adopted the recommendations contained in the APIP but, in doing so, modified the hydrologic component to eliminate all current stormwater inflow to the lagoon system from the Strawberry and Potter Street storm drain connections. The Draft EIR will analyze this P&RC Plan as the proposed project and is referred to as the No Stormwater Project and the Preferred Project. Both the Preferred Project and APIP Alternative 4B are described below.

The EIR may also consider additional alternatives such as additional ranges of tidal and stormwater flows or phased implementation of the Preferred Project. The alternatives analysis in the Draft EIR will be compliant with Section 15126.6 of the CEQA Guidelines and will also include an evaluation of a "No Project" Alternative.

Additional information regarding the APIP project can be found online at: <http://www.ci.berkeley.ca.us/ContentDisplay.aspx?id=22418>.

Preferred Project: The Preferred Project would include rehabilitation of the existing tide tubes connecting the lagoons to San Francisco Bay in order to increase tidal exchange between the lagoons and Bay waters, thereby increasing the levels of dissolved oxygen and lowering the water temperature in the lagoons. The Preferred Project would also eliminate the inflow of stormwater runoff to the lagoons from the Potter Street and Strawberry storm drains located at the south and north ends of the Park, respectively. Other components of the Preferred Project would include constructing a 20-foot wide channel between the Model Yacht Basin and the Main Lagoon; modifying the Strawberry and Potter storm drains to allow greater tidal inflow and outflow to the Main Lagoon and Model Yacht Basin, respectively; and the potential installation of water quality best management practices (BMPs) in the watershed area that is directly tributary to the Aquatic Park lagoons. These BMPs may also include construction of created wetlands at Bird Island. The Preferred Project was developed after the completion of the APIP and, thus, was not evaluated at the same level of detail as APIP Alternative 4B.

APIP Alternative 4B: The No Additional Stormwater Alternative was identified as being the approach that, of the 14 scenarios presented in the APIP, could offer the greatest amount of tidal exchange between the lagoons and Bay waters, thereby increasing the levels of dissolved oxygen and lowering the water temperature in the lagoons. APIP Alternative 4B would allow no additional stormwater into the lagoons than under current conditions. Unlike the Preferred Project, APIP Alternative 4B would not eliminate

stormwater runoff from the Potter Street and Strawberry stormdrains and the primary difference between the Preferred Project and APIP Alternative 4B would be how the storm drain infrastructure is operated. As indicated above, the APIP Preferred Conceptual Design will be evaluated in the Draft EIR as an alternative to the preferred project.

Based on the project description and the Lead Agency's understanding of the environmental issues associated with the project, the following topics will be analyzed in detail in the Draft EIR:

- Biological Resources
- Hydrology and Water Quality

The Lead Agency solicits comments regarding the scope and content of the Draft EIR from all interested parties, responsible agencies, agencies with jurisdiction by law, trustee agencies, and involved agencies. Please send your written/typed comments (including a contact name) to the following:

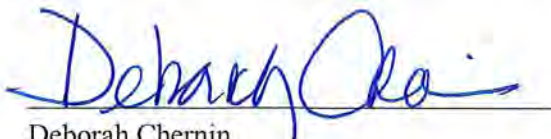
City of Berkeley
Department of Parks, Recreation & Waterfront
ATTN: Deborah Chernin
2180 Milvia Street
Berkeley, CA 94704
DChernin@CityofBerkeley.info

Due to the time limits mandated by California law, written comments must be sent at the earliest possible date, but no later than **November 21, 2011**.

Notice of Scoping Meeting: Pursuant to California Public Resources Code §21081.7, 21083.9, and 21092.2, the Lead Agency will conduct a public scoping meeting for the same purpose of soliciting oral and written comments from interested parties requesting notice, responsible agencies, agencies with jurisdiction by law, trustee agencies, and involved federal agencies, as to the appropriate scope and content of the EIR. Two meetings will be held to solicit comments on the scope of the Draft EIR. The first meeting will be held on **October 24, 2011 at 7:15pm** at the location listed below. An additional public scoping meeting will be held in November and the time and location of the second meeting will be announced at the October 24, 2011 meeting and will be posted on the P&RC website (<http://www.ci.berkeley.ca.us/DepartmentHome.aspx?id=8506>) no later than October 25, 2011.

**Frances Albrier Center at San Pablo Park
2800 Park Street (between Russell and Ward Streets)
Berkeley, CA 94702**

For additional information, please contact Deborah Chernin at (510) 981-6715.



Deborah Chernin
Principal Planner

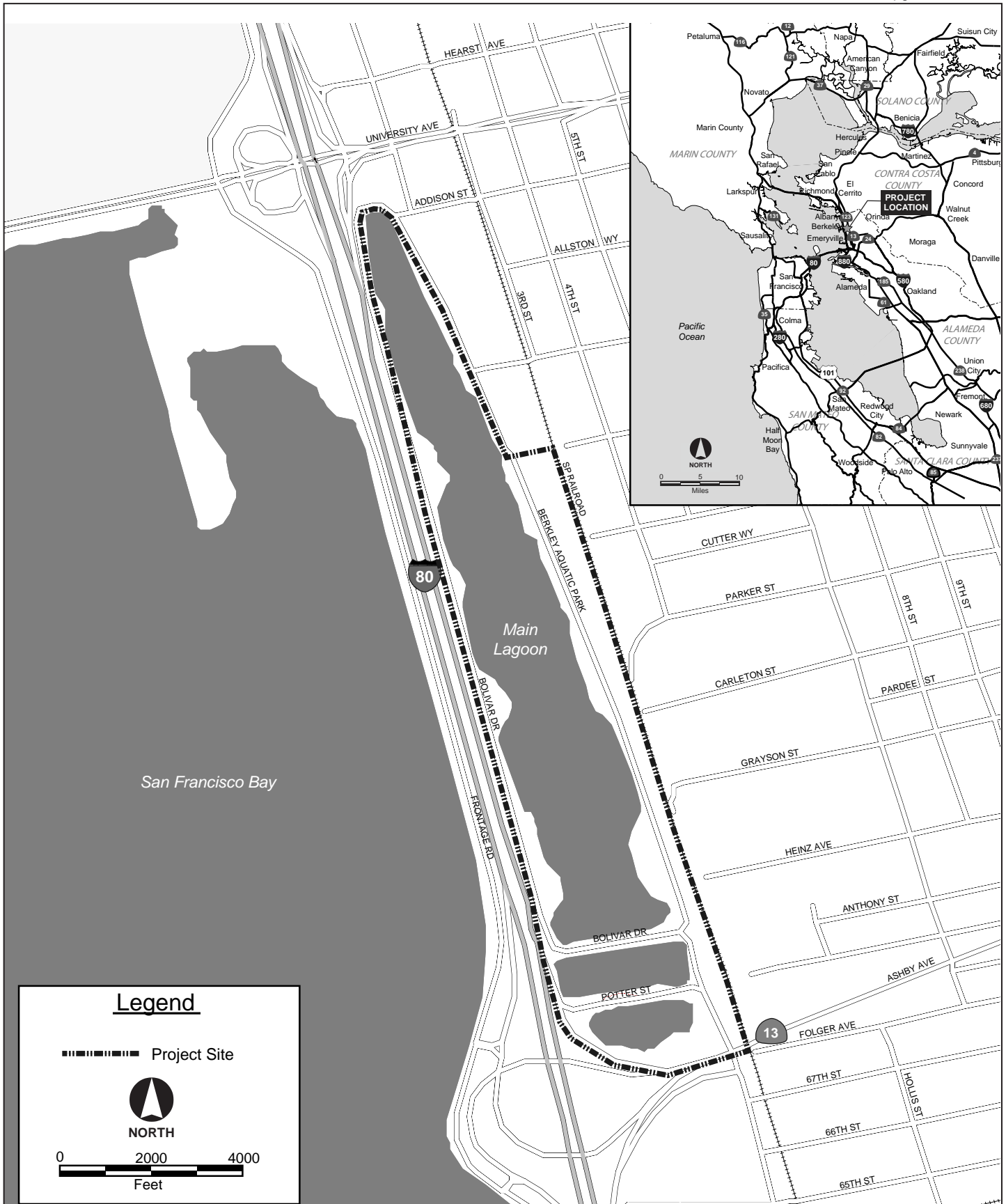
Date: 10/17/11



FIGURE 2
Aerial Photograph

100022706

Berkeley Aquatic Park Improvement Program



Source: Precision Mapping Street and Traveler 8, 2009.

ATKINS

FIGURE 1
Regional and Project Vicinity

100022706

Berkeley Aquatic Park Improvement Program

***Appendix A4 Scoping Comments Received on the
Second Notice of Preparation***



Edmund G. Brown Jr.
Governor

STATE OF CALIFORNIA
Governor's Office of Planning and Research
State Clearinghouse and Planning Unit



Ken Alex
Director

Notice of Preparation

October 19, 2011

To: Reviewing Agencies

Re: Berkeley Aquatic Park Improvement Project EIR
SCH# 2009062093

Attached for your review and comment is the Notice of Preparation (NOP) for the Berkeley Aquatic Park Improvement Project EIR draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Deborah Chernin
City of Berkeley
2180 Milvia Street
Berkeley, CA 94704

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott Morgan".

Scott Morgan
Director, State Clearinghouse

Attachments
cc: Lead Agency

**Document Details Report
State Clearinghouse Data Base**

APIP EIR Combined - pg 270

SCH# 2009062093
Project Title Berkeley Aquatic Park Improvement Project EIR
Lead Agency Berkeley, City of

Type NOP Notice of Preparation

Description The Preferred Project would include rehabilitation of the existing tide tubes connecting the lagoons to San Francisco Bay in order to increase tidal exchange between the lagoons and Bay waters, thereby increasing the levels of dissolved oxygen and lowering the water temperature in the lagoons. The Preferred Project would eliminate the inflow of stormwater runoff to the lagoons from adjacent storm drains. An additional alternative will be evaluated that would allow no additional stormwater into the lagoons than under current conditions. Unlike the Preferred Project, the alternative would not eliminate stormwater runoff from storm drains and the primary difference between the Preferred Project and the alternative would be how the storm drain infrastructure is operated.

Lead Agency Contact

| | | | |
|----------------|--------------------|-----------------|------------------|
| Name | Deborah Chernin | | |
| Agency | City of Berkeley | | |
| Phone | 510-981-6715 | Fax | |
| email | | | |
| Address | 2180 Milvia Street | | |
| City | Berkeley | State CA | Zip 94704 |

Project Location

| | | | | | |
|----------------------|---|--------------|----|----------------|----------|
| County | Alameda | | | | |
| City | Berkeley | | | | |
| Region | | | | | |
| Cross Streets | Adjacent to I-80 between Ashby and University Avenues | | | | |
| Lat / Long | | | | | |
| Parcel No. | 53-1644-6 through 60-2521-3-1 | | | | |
| Township | 1S | Range | 4W | Section | 3,10 |
| | | | | Base | Mt. Diab |

Proximity to:

| | |
|------------------|---|
| Highways | 80 |
| Airports | None |
| Railways | Amtrak |
| Waterways | San Francisco Bay, Aquatic Park |
| Schools | Multiple |
| Land Use | Recreational/Unclassified/Mixed Use-Light Industrial/Open Space |

Project Issues Biological Resources; Drainage/Absorption; Flood Plain/Flooding; Vegetation; Water Quality; Wetland/Riparian

Reviewing Agencies Resources Agency; Office of Historic Preservation; Department of Parks and Recreation; San Francisco Bay Conservation and Development Commission; Department of Water Resources; Department of Fish and Game, Region 3; Native American Heritage Commission; Public Utilities Commission; California Highway Patrol; Caltrans, District 4; Department of Toxic Substances Control; Regional Water Quality Control Board, Region 2

| | | | | | |
|----------------------|------------|------------------------|------------|----------------------|------------|
| Date Received | 10/19/2011 | Start of Review | 10/19/2011 | End of Review | 11/17/2011 |
|----------------------|------------|------------------------|------------|----------------------|------------|

VOI Distribution List

any

County: Alameda

SCH#

2009082093

| | | | | |
|--|--|--|---|---|
| <input type="checkbox"/> Resources Agency | <input type="checkbox"/> Fish & Game Region 1E Laurie Harnsberger | <input checked="" type="checkbox"/> Public Utilities Commission Leo Wong | <input type="checkbox"/> Caltrans, District 8 Dan Kopulsky | <input type="checkbox"/> Regional Water Quality Control Board (RWQCB) |
| <input checked="" type="checkbox"/> Resources Agency Nadell Gayou | <input type="checkbox"/> Fish & Game Region 2 Jeff Drongesen | <input type="checkbox"/> State Lands Commission Marina Brand | <input type="checkbox"/> Caltrans, District 9 Gayle Rosander | <input type="checkbox"/> RWQCB 1 Cathleen Hudson North Coast Region (1) |
| <input type="checkbox"/> Dept. of Boating & Waterways Mike Sotelo | <input checked="" type="checkbox"/> Fish & Game Region 3 Charles Armor | <input type="checkbox"/> Tahoe Regional Planning Agency (TRPA) Cherry Jacques | <input type="checkbox"/> Caltrans, District 10 Tom Dumas | <input checked="" type="checkbox"/> RWQCB 2 Environmental Document Coordinator San Francisco Bay Region (2) |
| <input type="checkbox"/> California Coastal Commission Elizabeth A. Fuchs | <input type="checkbox"/> Fish & Game Region 4 Julie Vance | <u>Business, Trans & Housing</u> | <input type="checkbox"/> Caltrans, District 11 Jacob Armstrong | <input type="checkbox"/> RWQCB 3 Central Coast Region (3) |
| <input type="checkbox"/> Colorado River Board Gerald R. Zimmerman | <input type="checkbox"/> Fish & Game Region 5 Leslie Newton-Reed Habitat Conservation Program | <input type="checkbox"/> Caltrans - Division of Aeronautics Philip Crimmins | <input type="checkbox"/> Caltrans, District 12 Marlon Regisford | <input type="checkbox"/> RWQCB 4 Teresa Rodgers Los Angeles Region (4) |
| <input type="checkbox"/> Dept. of Conservation Jonathan Martis | <input type="checkbox"/> Fish & Game Region 6 Gabrina Gatchel Habitat Conservation Program | <input type="checkbox"/> Caltrans - Planning Terri Pencovic | <u>Cal EPA</u> | <input type="checkbox"/> RWQCB 5S Central Valley Region (5) |
| <input type="checkbox"/> California Energy Commission Eric Knight | <input type="checkbox"/> Fish & Game Region 6 I/M Brad Henderson Inyo/Mono, Habitat Conservation Program | <input checked="" type="checkbox"/> California Highway Patrol Bob Nannini Office of Special Projects | <input type="checkbox"/> Air Resources Board | <input type="checkbox"/> RWQCB 5F Central Valley Region (5) Fresno Branch Office |
| <input type="checkbox"/> Cal Fire Allen Robertson | <input type="checkbox"/> Dept. of Fish & Game M George Isaac Marine Region | <input type="checkbox"/> Housing & Community Development CEQA Coordinator Housing Policy Division | <input type="checkbox"/> Airport Projects Jlm Lerner | <input type="checkbox"/> RWQCB 5R Central Valley Region (5) Redding Branch Office |
| <input type="checkbox"/> Central Valley Flood Protection Board James Herola | <u>Other Departments</u> | <u>Dept. of Transportation</u> | <input type="checkbox"/> Transportation Projects Lucille Ommering | <input type="checkbox"/> RWQCB 6 Lahontan Region (6) |
| <input checked="" type="checkbox"/> Office of Historic Preservation Ron Parsons | <input type="checkbox"/> Food & Agriculture Steve Shaffer Dept. of Food and Agriculture | <input type="checkbox"/> Caltrans, District 1 Rex Jackman | <input type="checkbox"/> State Water Resources Control Board Regional Programs Unit Division of Financial Assistance | <input type="checkbox"/> RWQCB 6V Lahontan Region (6) Victorville Branch Office |
| <input checked="" type="checkbox"/> Dept. of Parks & Recreation Environmental Stewardship Section | <input type="checkbox"/> Dept. of General Services Public School Construction | <input type="checkbox"/> Caltrans, District 2 Marcelino Gonzalez | <input type="checkbox"/> State Water Resources Control Board Student Intern, 401 Water Quality Certification Unit Division of Water Quality | <input type="checkbox"/> RWQCB 7 Colorado River Basin Region (7) |
| <input type="checkbox"/> California Department of Resources, Recycling & Recovery Sue O'Leary | <input type="checkbox"/> Dept. of General Services Anna Garbeff Environmental Services Section | <input type="checkbox"/> Caltrans, District 3 Bruce de Terra | <input type="checkbox"/> State Water Resources Control Board Phil Crader Division of Water Rights | <input type="checkbox"/> RWQCB 8 Santa Ana Region (8) |
| <input checked="" type="checkbox"/> S.F. Bay Conservation & Dev't. Comm. Steve McAdam | <input type="checkbox"/> Dept. of Public Health Bridgette Blinning Dept. of Health/Drinking Water | <input checked="" type="checkbox"/> Caltrans, District 4 Lisa Carboni | <input checked="" type="checkbox"/> Dept. of Toxic Substances Control CEQA Tracking Center | <input type="checkbox"/> RWQCB 9 San Diego Region (9) |
| <input checked="" type="checkbox"/> Dept. of Water Resources Resources Agency Nadell Gayou | <u>Independent Commissions, Boards</u> | <input type="checkbox"/> Caltrans, District 5 David Murray | <input type="checkbox"/> Department of Pesticide Regulation CEQA Coordinator | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Conservancy | <input type="checkbox"/> Delta Protection Commission Linda Flack | <input type="checkbox"/> Caltrans, District 6 Michael Navarro | | |
| <u>Fish and Game</u> | <input type="checkbox"/> Cal EMA (Emergency Management Agency) Dennis Castrillo | <input type="checkbox"/> Caltrans, District 7 Elmer Alvarez | | |
| <input type="checkbox"/> Dept. of Fish & Game Scott Flint | <input type="checkbox"/> Governor's Office of Planning & Research State Clearinghouse | | | |
| <input type="checkbox"/> Environmental Services Division | <input checked="" type="checkbox"/> Native American Heritage Comm. Debbie Treadway | | | |
| <input type="checkbox"/> Fish & Game Region 1 Donald Koch | | | | |

Last Updated 08/23/2011



Berkeley Water Ski Club

Nov 20th, 2011

My name is Randy Adams; I have been member of the Berkeley Water Ski Club for eight years. I am currently a board member and city liaison for club. I have been skiing at the Aquatic park since 2005.

As the city representative for The Berkeley Water Ski Club it is my responsibility to disseminate information to the board & club members regarding to our activities at the Berkeley Aquatic Park. Our club has been monitoring the progress of the Aquatic Park Improvement Program with great interest since the initial report was released in 2003, and we are greatly concerned with the potential impact of this program on our club.

The purpose of our club is to promote the sport of water skiing as a recreational and competitive activity that is both healthful and enjoyable. Our club unites people of all ages interested in water-sports for their mutual improvement and good fellowship. By a pooling of members' resources and talents, the club is able to provide water skiing facilities that would not otherwise be available to individuals.

Our club has regularly scheduled "Work-Parties" at the Aquatic Park for general clean-up and maintenance of the grounds and facilities. Our Work Parties typically involve maintenance the facilities includes; graffiti removal, roofing repairs, dock repairs, plumbing repair, and generally keeping the premises clean and safe of all park users. Our club makes efforts to be eco-conscious and good citizens, we strictly respect the local bird population and wildlife.

The club sponsors the Learn to Ski Days which is part of the Berkeley Marina Experience Summer Program. This program provides lessons in water skiing to local children and is run through the Berkeley Marina Experience Summer Program, has a 16 year history has been extremely successful and rewarding for all those involved.

Our club sponsors the Nor-Cal Wednesday Night Ski League in association with the National Ski League. The league runs each Wednesday from 4pm to dusk, beginning the first week of June and running through the last week of August. The ski league offers an opportunity for non-club members to participate in our sport in a "fun-tournament" format. This event regularly attracts 15-25 skiers every week.



Berkeley Water Ski Club

Our clubs access to the water has been severely limited by the city to only 5 months out of the year by City Council Resolution NO 58,517-N.S. permitting water skiing only from May 1st to Sept 30th.

The water-use agreement between our club and the Berkeley Paddling & Rowing Club (see appendix A) was defined in 1996, it specifies the times which water-skiing is allowed and when it is restricted in the Lagoon. This schedule currently gives half of each day exclusively to the paddling & rowing club.

These restrictions have had an unfortunate effect resulting in diminished use at the Aquatic Park over the past 12 plus years. Additionally, the restricted access to the water means our club does not have a "presence" at the park during the winter months from October through April. Our club is eager to change the perception of lack of use or of neglect at the Aquatic-Park site; it is simply the lack of access to the water that has created this unfortunate scenario. We are working hard to improve the appearance of the facilities and make them more inviting to our members & guests but the schedule and restrictions on water-use are stifling our efforts.

Now it appears that the majority of the time-frame for this Environmental Impact Report is occurring when there will no waterskiing or any activities by our club. In May our clubs usage of the Aquatic park lagoon is only 2 or 3 days a week. From June through August our peak usage is 3 to 4 days a week.

We are concerned that our clubs use of the facilities and lagoon are not going to be fully represented by this study since it does not encompass the period with our peak usage.

Sincerely-
Randy Adams
Berkeley Water Ski Club
Berkeley City Liaison / Board Member / Treasurer
PO Box 5334 Berkeley CA 94705



Berkeley Water Ski Club

Appendix A:

Water Usage Agreement Schedule:

BERKELEY WATER SKI CLUB SCHEDULED HOURS @ THE AQUATIC PARK

Schedule Times Beginning @ 7AM and Ending @ 8PM

Shaded areas indicate scheduled times for Water Skiing / Human Paddled Boats are Allowed at all times

| Hours | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|----------|--------|---------|-----------|----------|--------|----------|--------|
| 7-8 AM | | | | | | | |
| 8-9 AM | | | | | | | |
| 9-10 AM | | | | | | | |
| 10-11 AM | | | | | | | |
| 11-12 AM | | | | | | | |
| 12-1 PM | | | | | | | |
| 1-2 PM | | | | | | | |
| 2-3 PM | | | | | | | |
| 3-4 PM | | | | | | | |
| 4-5 PM | | | | | | | |
| 5-6 PM | | | | | | | |
| 6-7 PM | | | | | | | |
| 7-8 PM | | | | | | | |

No Skiing is Permitted During the Months of Oct, Nov, Dec, Jan, Feb, Mar, & Apr.



Berkeley Water Ski Club

2010 BWSC Income & Expenses

| <u>General Income</u> | Amount |
|---|--------------------|
| BWSC Dues @ \$350 / \$50 | \$17,156.25 |
| Ski Rights/Initiation Fees | \$4,200.00 |
| Tournaments | \$1,037.00 |
| Merchandise / Fundraiser | \$0.00 |
| Dinner Dance | \$1,440.00 |
| Interest Income | \$25.00 |
| Total Income | \$23,858.25 |
| <u>Expenses</u> | |
| <u>Website</u> | \$105.00 |
| Post-Card with 2010 schedule of events | \$275.00 |
| <u>Insurance</u> | |
| General Liability Policy | \$2,155.25 |
| Directors & Officers Policy | \$1,232.50 |
| Delta Dock / Property Policy | \$691.13 |
| <u>Leases & Permits</u> | |
| Berkeley Aquatic Park | \$4,400.00 |
| Delta Dock & Island | \$5,000.00 |
| <u>Maintenance</u> | |
| Delta Dock | \$2,675.96 |
| Berkeley Aquatic Park | \$1,487.00 |
| Equipment / Facilities both sites | \$250.00 |
| <u>Donations</u> | |
| Jr. Development | \$500.00 |
| <u>Events</u> | |
| Installation Dinner/Dance | \$1,956.00 |
| Cal State Champ. Site Fee for Shortline | \$1,400.00 |
| Gas Fees for Tournaments | \$277.00 |
| Gas Fees for Learn to Ski Days | \$120.00 |
| <u>Misc</u> | |
| Tournament Sanction Fees | \$600.00 |
| Executive Board Admin | \$106.00 |
| USA W. Ski Club Membership | \$75.00 |
| Port-o-Potty | \$280.00 |
| Raffle | \$0.00 |
| Awards | \$50.00 |
| Berkeley P.O box | \$72.00 |
| Misc- Other | \$120.00 |
| Property Tax / Possessory Interest | \$285.48 |
| Total Expenses | \$24,113.32 |
| Net Loss | \$255.07 |

PATRICIA BENGTON-JONES

2019 2ND.STREET

BERKELEY .CA.94710

Professional artist

Classes available

I have been in this workspace location since 1985.

I used the paths around the lake to walk my dog's.

Rented space on the dock for my El Toro sailboat and sailed on the lake when first moving here.

On October 2000 Mayor Shirley Dean gave me a certificate of Appreciation for my work in helping to create the Aquatic Park Children's Playground "Dreamland for Kids".

I designed and toiled with assistance ,the flagstone sandbox and benches.To me my proudest volunteering to add use to the park.

I've watched the lake shrink in size, sides ,and the North End .As it is filling in with silt and the

Improper flowing of the water. The widening of the freeway affected air and plants as well as noise.

But the plans of seven stories building in area will present impact this great nature spot.

Thank you for allowing me to express my concerns.

Patricia Bengton -Jones

P.Bengtson-Jones@AOL.Com.

Director Scott Ferris.

November 18, 2011

Attn: Deborah Chernin
Parks, Recreation and Waterfront
2180 Milvia, Berkeley, CA 94704.

Re:
EIR for Berkeley Aquatic Park
Improvement Program (APIP)

Dear Mr. Ferris,

I attended the "Public" Hearing on the EIR for APIP on Wednesday 11/16/11, having learned of it from a friend. I was shocked to hear, from a couple of Parks and Rec Commissioners there, that they had not been notified of the meeting/hearing which was sparsely attended.

THE PUBLIC COMMENT PERIOD MUST BE EXTENDED
Beyond Monday 11/21/11 which is not even one month from the scoping session held October 24, 2011

The closing date for public comment should follow the Lawrence Berkeley National Labs (LBNL) announcement of its choice for a second campus which could be Aquatic Park. If chosen, the potential impact of LBNL research activities (use of toxic chemicals, radionuclides, nanotechnology) on the water and air quality of Aquatic Park would therefore be of major importance in the EIR analysis.

Since LBNL's announcement is yet to come and the Holidays are upon us, the closing date for public comments should be no sooner than mid-January 2012.

Sincerely, Gene Bernardi

Director Scott Ferris.

November 22, 2011

Attention: Deborah Chernin

Parks and Recreation and Waterfront
2180 Milvia, Berkeley, CA 94704

Re: EIR for Berkeley Aquatic Park
Improvement Program (APIP)

Dear Mr. Ferris,

I am enclosing the 9/27/11 letter submitted to the Berkeley City Council by twelve (12) organizations concerned with ENVIRONMENTAL and Public Safety so that these concerns will be addressed in the Draft EIR for the Berkeley Aquatic Park Improvement Program.

Whether it's the Lawrence Berkeley National Laboratory and UC, or private research companies, who intend to occupy Aquatic Park land, or that adjacent to it, (as part of the "Green" Corridor) those who are concerned with wildlife, such as migratory water fowl, and those concerned with recreational use of the park, must seriously consider the enclosed 'letters' warning that synthetic biology, an extreme form of genetic engineering, poses risks to public health and the environment.

Sincerely,

Gene Bernardi

In 10/25/11 Packet for
Berkeley City Council

September 27, 2011

City Council
City of Alameda
2263 Santa Clara Avenue
Alameda, CA 94501

City Council
City of Albany
1000 San Pablo Avenue
Albany, CA 94706

City Council
City of Berkeley
2180 Milvia Street
Berkeley, CA 94704

City Council
City of Emeryville
1333 Park Avenue
Emeryville, California 94608

City Council
City of Oakland
1 Frank H. Ogawa Plaza
Oakland, CA 94612

City Council
City of Richmond
440 Civic Center Plaza
Richmond, CA 94804

Dear City Council Members:

We are writing to raise concerns about the proposed second campus of the Lawrence Berkeley National Laboratory (LBNL) and the U. C. Berkeley Synthetic Biology Institute (SBI) that is being considered for one of your respective cities. Much of the research that will be conducted in this laboratory will be on the emerging technology called synthetic biology. Synthetic biology is an extreme form of genetic engineering that is attempting to create novel, potentially self-replicating artificial life forms from synthesized DNA. The risks this research poses to worker safety, public health and the environment are currently being ignored.

While some find promise in synthetic biology for manufacturing new products and helping us to better understand biological processes, it is an inherently risky technology. Synthetic biology research could result in enhanced virulence in existing hosts, heightened ability to infect a wider range of hosts, and resistance to antimicrobials, antivirals, vaccines and other treatment or containment modalities.

Laboratory accidents are much more common in the U.S. than most people realize and often go unreported. If there were an accidental release of engineered organisms in this lab, the health of workers, the environment and entire communities could be put at risk. Already, the current lack of adequate safety protocols and biocontainment within rDNA labs has caused serious illness and death. Since synthetic biology's objective lies in engineering novel life forms and products with the potential to interact with human biology and other cellular processes, we believe this research poses dangers (both from accidental and deliberate uses) unforeseen in the regulatory framework of standard rDNA research.

Therefore, before any decisions are made on a specific site for this new lab, we believe a comprehensive, independent and transparent safety and risk analysis capable of assessing these threats must be completed. It is simply unacceptable to allow the laboratory to self-regulate. Moreover, it must be ascertained whether such research is even appropriate near urban centers. Safety regulations and procedures must be created and tailored to address the novel aspects of this new science, including whistleblower protections and forums for workers to raise concerns,

Chernin, Deborah

Subject: FW: Berkeley Aquatic Park Improvement Program Draft EIR Scoping Comment
Attachments: Island Maintenance 1.jpg; Island Maintenance 2.jpg; Island Fence Repaired.jpg; Sediment Buildup at Main Inlet.jpg

From: Matt Brandt [mailto:matt_does_ski@hotmail.com]
Sent: Sunday, November 20, 2011 10:48 PM
To: Chernin, Deborah
Subject: Berkeley Aquatic Park Improvement Program Draft EIR Scoping Comment

Dear Ms. Chernin,

I have publicly spoken at the last two scoping meetings but I would also like to formally submit my comments in writing. My name is Matt Brandt of Pleasanton, CA and I choose to do most of my community service work in Berkeley. I have been skiing at the Aquatic Park since 1993 and I am currently the Aquatic Park Facilities Chairman for the Berkeley Water Ski Club.

I am in favor of improving the water quality of the Aquatic Park while eliminating all additional stormwater since my fellow skiers and I have contact with the water during our sport. For over 50 years the Berkeley Water Ski Club has been a major user of the Aquatic Park but from reviewing the project plans I don't feel there has been input from our club to learn how we may be impacted. This is evident by the plans to fill in the parking lot and island that we currently lease and maintain with half the dirt excavated from the wetlands construction.

For the last 5 years our club has held a Ski League every Wednesday night from June through August which is also used as an open house to bring in new club members. This event consistently draws between 15 and 25 skiers a night which requires the entire parking lot area. In the past year we have focused our maintenance efforts on improving the appearance of the island (see attached pictures) and began using it during our weekly Ski League competition. This would not appear in Aquatic Park Natural Resource Management Study (NRMS) which was prepared back in 2003.

Another concern is there is no mention or published studies of the estimated costs to maintain the proposed hydrology improvements. Our club's site is located near the Main Lagoon Inlet/Outlet Tide Tubes which requires dredging due to sediment accumulation from the flows to the bay. The last time this occurred was in 2008 which required special disposal of the dredged material and probably needs to happen again soon judging from the current build up in front of the tubes (see attached picture). The proposed hydrology improvement is said to take the total lagoon tidal exchange with the bay from every 16 days to 3 days, an increase of over 5 times. This would indicate that the increased flows will require yearly dredging to ensure that the desired hydrology benefits to the environment are consistent and everlasting to the habitat that may depend on them.

We would also need to be involved with the details of the bridge that will be constructed to span the 20 foot channel between the Main Lagoon and Model Yacht Basin. This route is used to access the launch ramp and must be able to easily accommodate the width our boat trailers.

Thanks for your consideration and we are looking forward to be more involved in the project's future.

Best Regards,

Matt Brandt
 Berkeley Water Ski Club

STATE OF CALIFORNIA - BUSINESS TRANSPORTATION AND HOUSING AGENCY

EDMUND G. BROWN JR., Governor

DEPARTMENT OF TRANSPORTATION

111 GRAND AVENUE

P. O. BOX 29680

OAKLAND, CA 94623-0680

PHONE (510) 286-5541

FAX (510) 286-5559

TTY 711

*Flex your power!
Be energy efficient!*

November 17, 2011

ALA080152

ALA-80-5.82

SCH#2009062093

Ms. Deborah Chernin
City of Berkeley
2180 Milvia Street
Berkeley, CA 94704

Dear Ms. Chernin:

Berkeley Aquatic Park Hydrology and Habitat Improvement Project - Notice of Preparation

Thank you for including the California Department of Transportation (Department) in the environmental review process for the Berkeley Aquatic Park Hydrology and Habitat Improvement Project. We do not have any comments at this time. However, please continue to send future project-related environmental documents for our review.

Should you have any questions regarding this letter, please call Yatman Kwan of my staff at (510) 622-1670.

Sincerely,

GARY ARNOLD

District Branch Chief

Local Development - Intergovernmental Review

c: State Clearinghouse



October 24, 2011

Deborah Chernin
City of Berkeley
Department of Parks, Recreation & Waterfront
2180 Milvia Street
Berkeley, CA 94704

Subject: EIR Scoping comments for the Berkeley Aquatic Park Improvement Program

Dear Ms. Chernin,

Thank you for providing the East Bay Regional Park District ("District") with a copy of the Notice of Preparation (NOP) for the proposed Berkeley Aquatic Park Improvement Program (APIP). Aquatic Park is adjacent to Eastshore State Park which is jointly owned by the District and State Department of Parks and Recreation, and operated by the District.

The District reviewed a June 24, 2009 NOP and provided a July 13, 2009 letter from Elizabeth Musbach regarding our interests in the proposed project. At that time we identified some right-of-way concerns regarding potential project work in the state park. The more recent NOP of October 19, 2011 suggests that there may be water quality and biological resource impacts to the state park due to proposed modifications to Strawberry Creek. The creek outfalls into the state park just west of the Berkeley Brickyard.

The nine-mile-long Eastshore State Park receives urban runoff from the cities of Oakland, Emeryville, Berkeley, Albany and Richmond. In addition, the state park shoreline is affected by floating debris from San Francisco Bay brought by tidal action and by prevailing westerly winds. Pollutants from urban areas and the Bay are a particularly acute problem in the state park when "first flush" runoff is discharged during the first large storms in the fall.

On page 17 of the APIP summary report there is mention under hydrology recommendation #3 that slide gates be installed on Strawberry stormdrain to "block first flush flows [into Aquatic Park] which carry the largest concentrations of pollutants." The report does not appear to indicate where the "blocked" first flush pollutants would instead be discharged. Without more specific information, it would appear that the overflow pollutants currently being discharged into Aquatic Park would instead be discharged into the state park. Such pollutants could include oil and grease, tire rubber, suspended sediments, plastic and inorganic debris.

Perhaps there is some additional information not contained in the APIP that explains what would become of the diverted runoff. The EIR should address any potential effects to water quality and biological resources in Strawberry Creek and the state park.

Board of Directors

Beverly Lane
President
Ward 6

Carol Severin
Vice-President
Ward 3

John Sutter
Treasurer
Ward 2

Ayn Wieskamp
Secretary
Ward 5

Whitney Dotson
Ward 1

Doug Siden
Ward 4

Ted Radke
Ward 7

Robert E. Doyle
General Manager

Figure 2 in the October 19, 2011 NOP identifies a "northern culvert" that discharges from Aquatic Park into the state park on the east side of the Berkeley Brickyard. We understand that this culvert may be of insufficient capacity, and/or its outfall into the state park may require dredging of an unnamed drainage on the east side of the Brickyard. This drainage begins just east of the Sea Breeze Café and drains south past the northern culvert outfall and into San Francisco Bay. The upper segment of the drainage is dominated by willows and the lower portion by cattails. There may be some tidal influence during extreme high tides. No outfalls from Aquatic Park are evident in this area and would appear to have been covered by fill.

The NOP does not indicate whether this drainage would require dredging in order to improve water quality and tidal circulation in Aquatic Park. If dredging and/or culvert replacement in the state park is necessary then the EIR should address these impacts to the state park. In addition, as noted in our July 13, 2009 letter the City would need to obtain an encroachment permit or right of entry from the District for such work. Rehabilitation of this drainage may also present a good opportunity to mitigate for potential dredging impacts.

During our recent conversation it became evident that additional design information for Strawberry Creek modifications (and potentially for dredging the northern outfall drainage) will be required before the potential effects to the state park can be determined. We request that when such information becomes available it be provided to the District. Review of this information may result in additional scoping comments and require coordination with the City.

Please call me at (510) 544-2622 should you have any questions regarding this letter.

Sincerely,



Brad Olson
Environmental Programs Manager

cc. Nancy Wenninger, Asst. General Manager
Larry Tong, Interagency Planning Manager

RECEIVED NOV 21 2011

November 20, 2011

City of Berkeley, Department of Parks, Recreation and Waterfront

Attention: Deborah Chernin

2180 Milvia Street

Berkeley, California, 94704

Dear Deborah Chernin:

I am writing in regard to the proposed Environmental Impact Report for alterations to Berkeley's Aquatic Park through the Aquatic Park Improvements Program (APIP). The proposed changes to Aquatic Park may have the potential to alter the historic character, uses, and environment of the Park. As part of the environmental review process the City should carefully document the history of the Park and assess each potential change in light of that history and determine potential significant impacts on cultural resources and appropriate mitigations for those impacts.

The Notice of Preparation indicates that detailed analysis in the DEIR may be limited to Biological and Hydrological / Water Quality issues. However, some of the changes proposed for Aquatic Park would have a clear impact on the cultural history of the property, such as the possible construction of a twenty-foot wide channel between the historically separate main lagoon and model yacht basin, and possible construction of wetlands adjacent to Bird Island.

Aquatic Park has a long and complex heritage that has never been fully researched / documented, making the park susceptible to the loss of historic and cultural resources through deterioration and incremental changes over time.

The DEIR should have a robust cultural resources section, based on through research and study of the Park history. This should include, at minimum, an accurate and complete chronology of the development and use of the Park and the immediate surrounding area that forms its context, and detailed history and analysis of several features and historical eras / aspects that are or may be significant in the history of the Park. These include, but are not limited to, the history of:

1. Native American history along the Berkeley waterfront; Aquatic Park is close to one of the largest and oldest shellmound sites in the Bay Area. Given this proximity, the DEIR should discuss and evaluate the potential for Native American sites / artifacts in Aquatic Park and its vicinity;

2. early plans for the Berkeley waterfront, recreation uses of the waterfront (including beach use and recreational boating) in Berkeley history, and identification of the location of any historic-era physical features such as piers, docks, or other structures that may have existed in the area that became Aquatic Park;
3. early commercial use of the vicinity and the history, though the present day, of commercial, manufacturing, and industrial facilities adjacent to Aquatic Park, particularly the property used until recently by American Soils and other privately owned parcels west of the railroad tracks;
4. the development of transportation / transit in the Aquatic Park environs, including the adjacent rail lines and the creation and subsequent expansion of the Eastshore Highway (now Interstate 880);
5. planning of the current Park by the City of Berkeley in the 1920s / 30s, including plans for facilities built and unbuilt, including a municipal natatorium;
6. funding and development of Aquatic Park by the Works Progress Administration (WPA) and other Federal "New Deal" agencies during the 1930s, including an analysis of the place and significance of Aquatic Park in the context of WPA / New Deal public improvements in Berkeley, the Bay Area, and California.

(This analysis should document and map all WPA funded and original features of Aquatic Park, including the shoreline, buildings, other structures such as the memorial flagpole and model yacht basin terraces and identify all extant features and the location of any that have been removed.

The analysis should also identify species and locations of early /original plantings in Aquatic Park and identify and map any extant plantings, including trees, from the early era of the Park.)

7. recreational and commemorative uses of Aquatic Park over the decades, including waterskiing, rowing, motor boat racing, model yacht racing, and the annual Hiroshima memorial ceremony and the facilities, if any, associated with those activities;
8. Aquatic Park in the context of park and recreation development throughout Berkeley and the region. The DEIR should examine whether Aquatic Park is the first, or one of the earliest, bay front park / recreation facilities to be developed on San Francisco Bay;

9. relationship of Aquatic Park to historic radio broadcasting facilities and the development of radio in the Bay Area, including station KRE and its facilities immediately south of the Park and adjacent to the South lagoon;
10. relationship of Aquatic Park to the LGBT history of Berkeley, including one of the first gay rights protests held at the Berkeley Police Department following an 1960s incident in which a gay man was shot and killed by police at Aquatic Park;
11. The development and history of modern-era facilities at or near Aquatic Park including the "Dream Land" playground, the pedestrian bridge over the freeway, and the proposed "living soundwall".

Thank you for your attention to these issues in the Aquatic Park Improvements Program CEQA process.

I would also like to note my concern that the October 19 Notice of Preparation was dated / circulated only five days (and three working days) before the Scoping meeting on October 24.

The NOP then referred recipients back to the City of Berkeley's Parks, Recreation and Waterfront website for information on a second, November, scoping meeting. However, the website contains only the announcement of the October 24 meeting. The City of Berkeley Community Calendar does not seem to contain any announcement of a November meeting. Was a second meeting held, or was the October 24 meeting the only opportunity to hear a presentation on the proposed project and offer public comment in person?

Sincerely,



Steven Finacom

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November 28, 2011

EIR Scoping Comments for the Aquatic Park Improvement Program (APIP)

Project Description

What is the complete description of the proposed project? The public can only ascertain possible impacts of any project if the exact nature of the project is published in advance. Without such information given at the beginning of the scoping comment period, the environmental review lacks validity. The DEIR must show technical drawings clear enough to unambiguously capture the geometric features of all built structures and all structures purchased and put into storage for potential future use. It should detail the proposed operation and management of all structures and analyze operational variations that the system permits. The report should also describe the maintenance protocol for all structures.

Without this clear presentation of all proposed construction activity, it is impossible to know the possible impacts to be studied. For example, fresh storm water can ride on top of denser, more saline tidewater, so the specific elevations of culvert connections can directly affect the relevant physical traits of the water being piped into the lagoon. Without first being shown the project drawings, it is difficult to ascertain where in the system sediment might accumulate, where storm water overflow might cause soil erosion, and where materials may get trapped. And without the technical drawings, it is impossible to propose alternative designs for comparison that might produce lower negative impacts.

How does the City intend to build the “preferred project” that blocks all storm water from the Potter and Strawberry Storm Drains from entering the park? How will storm water in Potter be blocked from being discharged into the lagoons through

the lateral “techite” overflow pipe that runs along the park’s east side? Will each outlet and manhole cover be blocked? Or will a permanent one-way gate be installed close to the Potter connection? How will these gates operate? Which are automated and which require staff to drive to the park during flood conditions to reach the structures for manual closure?

The EIR should show plan views and elevations of all proposed culvert connections and flow structures. Elevation views should be overlaid with the range of likely tidal levels under the various operating conditions, now and in the future with higher sea levels.

The report should detail all construction activities planned. To construct the flow channel on the northern shore of the Model Yacht Basin, how much soil will be removed? Will it be placed elsewhere in the park? Will it be tested for lead and other toxic material? What methods will be used to prevent contamination of the water of the lagoons due to construction activities? How much vegetation will be removed? What replanting scheme is proposed and how will the vegetation be managed during the 10-year installation period to eliminate invasive plants that will invade the disturbed soil?

Circulation Project is Designed to Serve as a Flood Control Project

This circulation project is designed to serve the City as a flood control project by construction of facilities that allow the diversion of storm water into the Aquatic Park lagoons. If built, that is the way in which it will be operated and all impacts of that expected operation are the ones that the EIR is required to study.

The two project proposals to increase circulation are actually only a single construction project; they vary merely in operational choices. The option that allows the discharge of storm water into the lagoons – in violation of the permanent ban on such discharges by State Water Board Order 70-14 – states that it will allow no more storm water into the lagoons than is currently discharged. If the larger storm drain outlets are constructed, that is unlikely to be the way in which it is actually operated. It is not likely the City staff will partially close the three discharge valves into the Main Lagoon / Model Yacht Basin system at the beginning of each new rainstorm in order to mimic current (also non-permitted) discharge conditions and that the staff will entirely close the new discharge valve into the Radio Tower Pond. Rather, it is expected that the gates will be kept in the fully open position during storms in order to increase the capacity of the two storm drains. The project review of this option, therefore, must analyze it in the way in which it will actually be used – an increased level of discharge of storm water into the two-lagoon system and entirely new discharges into the Radio Tower Pond.

The likelihood that the project will be used to temporarily divert storm water into Aquatic Park is not just mere suspicion; it is explicitly stated in the City of Berkeley Storm Drainage Master Plan by CH2M Hill. That Master Plan specifically identifies the use of the Aquatic Park lagoons as storm surge basins through construction of

new floodgates to increase the capacity of Potter and Strawberry Storm Drains. Recent staff presentations to City Council about plans to reduce flooding have focused on the diversion of floodwaters to Aquatic Park. In the Mayor's office, this project is known as the Aquatic Park Flood Control Project and the Mayor has lobbied for project support saying it is needed to reduce flooding in West Berkeley. City staff has told council members from West Berkeley that the project will reduce flooding in their districts. Council member Darryl Moore stated during a project presentation to Council that he would make sure that the project was used to move floodwaters into the park. The channel proposed between the Main Lagoon and the Model Yacht Basin is sized to handle not just increased tidal flows, but full discharge of flood waters through the widened storm drain outlets on the Potter Storm Drain. The proposed earth berm around the radio station building is built to a sufficient height to protect it from floodwater discharges, not from expected tidal circulation, which has never before required such a berm. Finally, Parks Commissioners were told that the City Attorney's office had determined that if the larger flood control gates were to be constructed, the City would have a legal liability to operate them for flood control to avoid liability for any damage caused by flooding east of the park.

If the City Attorney's office has determined that the project must be operated for flood control, then it is a flood control project and those impacts must be studied. It is not defensible to claim that if the City spends millions of dollars building larger floodgates that give them the ability to move economically harmful storm water into the park according to their Storm Drainage Master Plan and repeatedly stated intent, that the new floodgates would not be used in exactly that way.

The project option that allows the discharge of storm water into the park was rejected by the subcommittee that studied all the options. It was rejected by the full commission. It was rejected by the Berkeley City Council. It appears to still be under consideration not because such discharges are beneficial for the park's marine life, but because of its potential as flood control for the City. As such, this option must be compared against other flood control options, such as use of pumping to more rapidly move water out to the open bay. This is how many other cities rimming the bay handle flooding. The effectiveness and environmental impacts of different pumping options must be compared to the proposed impacts of using the park as a storm surge basin. Staff reports to Council have focused on the cost of pumping through a newly constructed pipe under the freeway and it is crucial that these cost estimates be analyzed for accuracy. More importantly, however, the EIR must consider the pumping option discussed throughout the APIP study period and specifically mentioned to Council during a project presentation. That option reduces construction costs by pumping storm water through pipes inserted into the existing storm drains.

Another flood control alternative to be compared to temporary storage in the Aquatic Park lagoons is the project identified in the recently-released Watershed Management Plan as the highest priority capital project – the replacement of the

existing Potter Storm Drain with a new pipe whose capacity is sufficient to handle all runoff from the Potter Watershed without flooding, even under high tide conditions. Its construction through municipal bond funding likely to be on the ballot next November would eliminate the need for storm water discharges into the park.

The current proposal must also be analyzed as to its effectiveness for flood control. That was not studied, or if studied, has never been presented to Council or the public. It is unknown whether full use of these four new floodgates to shift storm water to the park would be expected to reduce flooding on Sixth Street by six inches or by only one sixth of an inch. Reports from some West Berkeley neighbors suggest that flooding in their area seems directly related to adequate maintenance and cleaning of the storm drain catch basins; once the basin is cleared of debris, floodwaters immediately dissipate. For Council to make an informed decision comparing the benefits of a proposed project with its environmental impacts, they must have accurate information on which to base that judgment.

Water Board Order 70-14

It must be noted that all storm water containing waste must be diverted away from the Aquatic Park lagoons by order of the State of California's Regional Water Quality Control Board. Water Board Order 70-14 prohibits such discharge. It is a permanent order. It does not expire. While the City may apply to the Board to convert the prohibition into a permanent discharge permit, that has not yet taken place. Council has not been told that step will be required. And while staff has suggested to Council the order applies to industrial waste only, the Water Board regulator for Alameda County flatly disagreed with this interpretation in project comments sent to the City and also in the July 3, 2008 article in the Berkeley Daily Planet. "The order was intended to keep all storm water away from the lagoon," Wines said. "He rejected Chernin's distinction between polluted wastewater and storm water, saying that all water carried by the storm drains necessarily carries urban waste and pollution."

Any environmental benefits of discharging storm water into the lagoons are not at all clear and they have not been explained. The multiple types of damages are well documented and are the basis of the prohibition order. The process to overturn the order is lengthy. The Sierra Club has already written the Board opposing such a change. Citizens for East Shore Parks (CESP) also oppose such a change. The City has produced no formal, written memo from Board staff indicating any reasons why they would support overturning these nearly 40-year-old protections. Nor has there been documentation of the process the City will need to go through if they attempt to strip the park of this most basic water quality protection. Discharging storm water into the City's most regionally significant aquatic bird habitat does not appear to meet the standards of this community. Although the City of Berkeley Storm Water Master Plan did not mention the Board Order, use of the Aquatic Park lagoons for temporary storage of storm water runoff lies at the heart of the plan. The permitting issues and the environmental reasons for the order must be addressed directly and thoroughly in the EIR. If the City believes they can get the Water Board

to vote to change the permanent discharge prohibition into a permanent discharge permit, all written project comments and questions submitted to the City from the Board staff must be addressed in the environmental analysis.

Techite Overflow Pipe

As part of its settlement of the Water Board's Order 70-14 permanently prohibiting the discharge of storm water into the Aquatic Park lagoons, the City agreed to construct a storm water overflow diversion pipe from Parker Street to the Potter Storm Drain. The City stated at the time that the pipe would divert 80% of the local surface drainage into the Potter Storm Drain and from there out into the open bay where it would have reduced environmental impact. The techite diversion pipe, however, was constructed with no back-flow preventer and at such a low elevation that during storms it actually flows in the opposite direction. Rather than diverting local storm water away from the park, the pipe functions as a reliever valve for Potter and sends water from the City's entire south side into the lagoons at multiple locations.

The actual functioning of this pipe must be acknowledged in the EIR and its impacts studied and considered. For example, construction of the preferred option of no storm water discharge from the two storm drains that bracket the park means that a back-flow preventer would likely have to be constructed where the diversion pipe meets Potter. This was discussed by the subcommittee and the full commission, but has not been explicitly spelled out in any of the project reports.

Additionally, the pipe is nearly forty years old and has been reported by staff to be in very poor operating condition. Joints have become misaligned, allowing contaminated water to leak into the park through gaps. Storm water regularly spews out the access covers, whose locking seals have been removed. The oil/water separators are in complete disrepair and the pipes leading to the techite pipe have blockages and breaks. Contractor video monitoring of the culvert's condition, and other culvert condition reports must be documented and figured into the environmental impacts of the project.

Topics for EIR Analysis

The EIR should evaluate impacts on all birds, aquatic animals, plants, and algae with respect to all potential impacts on water quality. In addition to the summertime negative impacts of high temperature and low DO, potential wintertime impacts associated with contaminants in storm water runoff should be evaluated. The document should consider visitor impacts caused by construction and operation of the proposed system. It should analyze likely impacts on the park's infrastructure.

Flood Damage: The release of storm water into the Aquatic Park lagoons is the expected use of the new floodgates, so impacts of that flooding on the park must be thoroughly studied. As part of the APIP process, a topographic survey of the park was conducted. The results were never presented publicly, but they would serve as maps of expected flood conditions in the park, depending on the size and duration of

the storm. These flood maps, coupled with the projected discharges from the larger flood valves, must be used to accurately determine expected project impacts. These include trail closure and damage, shoreline collapse, damage to vegetation, and infrastructure damage to the buildings, parking lots, roadways, seating, utility lines, and other affected facilities. The EIR must consider the visitor impact of any resultant facility closures, the expected costs of cleaning up flood damage in the park, and for repairing or replacing all damaged infrastructure. Trash debris from the current non-permitted discharges is limited primarily to the lagoons and shoreline edges. Increased flooding would move that trash problem to higher locations throughout the park. For example, if the wood chips that provide ADA-required access to the Dreamland for Kids playground are soaked with contaminated storm debris, what are the costs for removal, disposal, and replacement of those chips? What about damage to the facilities of City tenants and the contents of those buildings? The document should consider impacts to private property from Addison to Channing. Would salt water inundation cause damage to the park landscaping and the health of its vegetation? The City of Berkeley Storm Drainage Master Plan calculates that use of the park for temporary storm water storage would result in flooding in the park to a depth of 7.4 feet above current water level (page 6-12), so the full impacts may cover a wide area, including neighboring private business developments, whose owners and tenants may not have received notification of the NOP or for the separate Scoping session.

Lagoon Tidal Levels: The project study period focused attention primarily on the volume of tidal exchange, but not on the problems associated with lagoon levels that are regularly higher than now or levels that are regularly lower than now. Under the proposed floodgate expansion project, what are the expected variations in lagoon levels? Shoreline collapse is a significant problem in management of both the park's infrastructure and its wildlife habitat value. As the original riprap that once held the shoreline in place has eroded or collapsed into the lagoons, the remaining shoreline consists in sections of poorly consolidated soil with a high sand content. Flood levels in the park increased in 1972 after construction of the Potter Overflow Techite Pipe with its multiple discharge outlets as far north of Parker. These flood levels have contributed to the loss of shoreline armoring and increased the rate of erosion. Any higher lagoon levels will exacerbate this shoreline collapse, and those impacts must be analyzed. This should include impacts on shoreline trees and other vegetation, as well as shoreline trails, roadways, and utility lines. Shoreline vegetation that hangs out over the bay water provides roosting for egrets, herons, and other aquatic waterfowl. Loss of this screening could remove refuge areas for these birds to feed and rest. Replanting of the park's original cypress trees around the entire shoreline should be a project mitigation, with landside shrubs and groundcovers also planted to provide initial protection until the trees reach maturity.

Shoreline collapse could also create additional habitat problems by converting deepwater habitat along the shore into areas of shallow water, which could increase lagoon temperatures in warmer weather and spur the growth of aquatic vegetation, identified as a hazard for boaters.

Higher lagoon levels may impact shoreline trail users when high tides submerge trails, particularly during flood conditions. The EIR should provide close up contour maps of the park from East Touchdown Plaza to Dreamland for Kids showing lagoon levels under all project variations including No Project; Repair and Resume Annual Cleaning of Existing System / No Discharge; One-way Outbound to Widened Strawberry; Preferred Project; 4B / No Additional Storm Water; and 4B / Full Discharge – use of 4B with no limitations on storm water discharge.

Will muddy sediments be deposited along the shoreline trail where it is at an elevation close to the lagoons' high tide design level? What is the plan for cleaning up the park and its trails after high water events? Which department would be responsible for cleaning up the trail, a designated spur of the Bay Trail? Would there be some time deadline for cleanup? What will be done to ensure that lead or other hazardous material in the deposited sediment does not become airborne? If flood levels cause more than fleeting closure of the trail (formerly signed as a designated City of Berkeley Bike Route), mitigation should include a safe, maintained alternative bike route further to the east. The area between Plexxicon's western gate and Bancroft Way is a designated park trail, rather than a public road for commercial traffic, and it could easily be modified to block through traffic. Will trash or harmful materials be deposited on parkland? Would higher lagoon levels at times submerge and damage the park's historic masonry seating? A mitigation to be considered would be construction of additional seating terraces throughout the park at sufficiently higher elevations.

Lower lagoon levels also have negative habitat impacts to be considered. Raising a single flap gate near the five Main Lagoon tide tubes can drop lagoon levels two feet and convert formerly productive feeding grounds for shorebirds and wading birds into dry land that is accessible to park visitors and their dogs. If the opening onto the storm drains are at an even lower elevation than the concrete edge that allows water to drain through those five tide tubes – or if the project envisions lowering that opening on the eastern side of those five tubes – these problems will be exacerbated at shallow areas throughout the lagoons. Lower lagoon levels also could exacerbate the high temperature / low DO problem that can occur in warmer weather and that has been cited as a primary reason for project construction.

The recreational impact of lower lagoon levels must also be studied in the EIR, as lower lagoon levels reduce safety for skiers, rowers, and paddlers by bringing them into closer contact with underwater obstacles. Mitigations for the skiers could include dredging of their slalom course, but only dredging of the entire lagoon would allow rowers and paddlers to continue their recreational activity throughout each day of the year in safety. The EIR should show bathymetric maps showing changes in lagoon depth over likely tidal cycles, including those seasonal periods identified in the NRMS of extreme lows that continue for many days. Impacts on rowers and paddlers must be determined.

A key feature of the lagoon levels that is not obvious to the casual observer is that the lagoons are subject to extended periods of higher than normal tides and extended periods of lower than normal tides, due to the relation of the tidal cycle to the bayside openings of the tide tubes and storm drains. This fact is discussed in the Natural Resources Management Study (NRMS). While exposure to the air can be tolerated for six hours or even longer, it can be toxic to benthic invertebrates living in tidal zones that are desiccated for several days at a time. Such drying out of shoreline mudflats also allows access by visitors and their dogs. Mitigation should call for full planting of the shoreline – except at built-in wildlife viewing terraces – with Monterey Cypress trees, as NRMS author Laurel Marcus told the Commissioners was her recommendation for the park’s shoreline.

Increased Sedimentation: The impacts of increased exchange of tidal waters must be considered in the EIR. A primary concern is the increased sedimentation of this regional deepwater habitat for waterfowl. Shallower water can increase water temperatures during warm weather, encourage aquatic vegetation, reduce safety for water recreational sports, and ultimately lead to the loss of the lagoons as deepwater habitat for migratory waterfowl. A guaranteed, funded plan of regular dredging, with monitoring to ensure compliance, is a project mitigation to be considered. Increased circulation may also change the nutrient load on the lagoons, and the resulting impacts on algal blooms and other aquatic vegetation must be studied. Increased sedimentation without a guaranteed system of maintenance dredging means shallower waters, linked to higher water temperatures.

Storm Water Discharges: The 4B alternative calls for “No Additional Storm Water” to be discharged into the lagoons. The EIR must quantify that exact volume that will not be exceeded. It must identify each and every outlet, grate, and manhole cover from which storm water is currently discharged during flood conditions and the volume of water released from each source. It should clarify the assumptions upon which those calculations are based – is it a 100-year flood or a large storm that happens once or twice a year? Does the 4B option mean that in a small storm the system would be operated so that only the current “small storm” volumes are discharged? Or that the amount discharged would be limited to the 100-year storm volume? If the former, the EIR must quantify the discharge volume limits that would apply for storms of that size and for a full range of sizes. If the latter, doesn’t that represent “additional storm water” over current conditions? The EIR must specify the exact methods by which weirs would function to limit discharges to current conditions and whether they are automated or require staff to operate.

Any project operation that allows for the discharge of storm water containing waste – in violation of longstanding permanent State Water Board orders – must be analyzed for all contaminants and habitat impacts. The Aquatic Park Water Quality Study of 1994 lists some pollutant levels and this data should be included in the EIR. The results of the City’s study of storm water quality from 2006 through 2008 should also be included. Pollutants and storm water contributions that should be studied include all those for which water quality objectives are identified in Chapter

3 of the RWQCB's Basin Plan such as bacteria, bioaccumulation, sediment, settleable material, suspended material, and toxicity. The study should include study of the impacts mentioned in Chapter 4 of the City of Berkeley Watershed Management Plan such as nutrients, heavy metals, toxic chemicals, oxygen-demanding substances, floatable materials, oil and grease, bacteria and viruses.

The EIR should study impacts on birds, aquatic animal life, and aquatic vegetation including algae caused by water turbidity, water temperatures, dissolved oxygen levels, chlorophyll, TPHs and PAHs, and suspended solids and particle size distribution.

A significant impact of storm water input to the lagoons is one that is not immediately obvious. The sudden discharge of large amounts of storm water runoff from the City's primary storm drains to the relative shallow, enclosed lagoons – even if completely filtered to drinking water standards – can be toxic to marine life due to the sudden change in salinity. All recent fish deaths have been attributed by staff and biological consultants as likely due to this cause.

Other water quality constituents for study appear in the Aquatic Park Water Quality Study of December 1994 on page 4 of Appendix A and throughout that report. They also appear in the preliminary project comments submitted to the City by the Water Board regulator in June 2007.

Water Temperatures: High lagoon water temperatures and the associated lower levels of dissolved oxygen have been stated as the problem the project is designed to solve. The report must include all temperature studies that have been done in the lagoons, detailing the locations and depths. The document should clearly distinguish between temperatures that are toxic to fish and those that are not. It should show the relationship between shallow waters and higher temperatures and separate the various causes for shallow water such as management of the lagoon below its design level, shoreline collapse related to higher lagoon levels in winter months when storm water is discharged into the park, and sedimentation caused by tidal flow and storm water discharge. It should call out those times and locations in the park when water temps may cause fish to move to cooler, deeper waters. It should identify the volume and temperature of water from the bay that is needed to bring those temperatures to a nontoxic level. If high temperatures are believed to have caused any fish deaths since the original project study began, those should all be detailed in the report.

Flow Channel Impacts: The flow channel to be dredged between the Model Yacht Basin and the Main Lagoon will generate tidal currents at the southern end of the Main Lagoon. The EIR should analyze the impacts of this flow channel on boating activities on the lagoon. The analysis should study the currents generated during normal tidal conditions, during “no additional storm water” conditions, and during “full discharge” conditions, as the Mayor has indicated the project will be operated.

In addition, the tidal flow through this channel will deposit sediment in the area, so these impacts on lagoon depth must be studied. The south end of the Main Lagoon is the spot where all boaters must maneuver to change their direction and the safety impacts of sandbars and unseen currents whose direction change over time must be shown.

Project Phasing: The likely project budget will not be able to do all phases of the various projects being studied. The EIR should show the proposed phasing of the different pieces of the project over time as funding becomes available. It should include cost estimates for each piece so the relative habitat value can be determined.

Tide Tube Gates and Armoring: The APIP project discussion mentioned gates on the tide tubes that could be sealed closed in the event of an oil spill, red tide, or other contamination in the bay. The current flap gates on the five tide tubes in the Main Lagoon are not able to do this and the gates on the tubes to the MYB and the RTP are missing and their replacement should be considered.

Armoring of all tide tubes, not just the five at Bird Island should be studied. Why would the City abandon the circulation pipes for the two southern ponds? These bay openings should all be designed with mechanisms to seal them shut in case of a toxic spill; the current flap gates do not serve that function.

Caltrans Runoff from I-80: BMP's should also be installed for runoff from I-80, which is currently piped into the lagoons. The City spent over two years working with Caltrans engineers to come up with a design concept for a swale just east of the freeway which would catch and filter storm water runoff and direct it southward for pumping to open lands in the middle of the Ashby interchange.

Maintenance and Operations of Structures

A range of factors determines the biological health of the aquatic life in the Aquatic Park lagoons. These include the City's maintenance and management practices for the resource, including repair and operation of all built structures. The effects of these practices must be included in all project analysis and their habitat impacts clearly delineated, separate from that of tidal circulation volumes. Study of the comparative impacts of these operational decisions is particularly important, as the City has stated that it can adaptively operate the built structures in any way desired, without Council or outside regulatory approval. Data based on "current levels" must call out which operation assumptions have been used. In what position are the one-way flap gates near Bird Island? Which storm water pipes have access covers that are sealed and which are open to discharge? At the Strawberry Storm Drain connection what position are the movable features set in? Will the aquatic plants that provide food and shelter for the fish and other creatures be harvested and removed for recreational purposes? The EIR must include analysis of the impact of all possible management options available by the project.

Lagoon levels: Historically, the lagoon level was mechanically maintained at a level somewhat higher than the lowest bay tides in order to protect the safety of water recreational activities and for wildlife habitat value. This is accomplished through five flap gates just east of the five tide tubes near Bird Island. Raising even a single gate, however, can drop the lagoon levels some two feet, contributing to a number of problems. Shallow feeding grounds used by shorebirds and wading birds become exposed, killing off the benthic organisms the birds feed on. Formerly productive shallows become dry land and allow intrusion by park visitors and their dogs, making the area and adjacent shallows unusable by birds trying to feed and roost. A prime example can be seen along the western shore of the Main Lagoon near the southern end, just north of the clubhouse of the Berkeley Paddling and Rowing Club, historically the park's richest feeding grounds for shorebirds and wading birds. During longer, warmer days, this gate position contributes to higher water temperatures throughout shallow areas of the lagoon. These higher temperatures are the result of the position of that single flap gate and any blame for lower DO levels must be properly attributed. For water recreational users, the lower elevations bring underwater hazards a couple of feet closer to the bottoms of the boats and represent safety hazards created by the gate position. The purpose of the lower lagoon level is said to create additional room for non-permitted storm water storage during the rainy season, as it allows the two-lagoon system to receive some 120 additional acre-feet of contaminated storm water. There would be no apparent reason to keep the lagoon levels lower in the summer when high temperatures can become problematic, yet the flap remains in the up position, damaging shorebird feeding and roosting throughout the park.

Harvesting of Aquatic Vegetation: During some summers the City hires a contractor to remove the aquatic vegetation in the park. This action removes countless number of fish and other marine life as well as their primary food and shelter. The project proposal is said to improve the bird life by increasing the health of the fish habitat, so any project analysis must take into account this habitat destroying practice. As the 1994 Aquatic Park Water Quality Study points out, removal of the aquatic vegetation that absorbs nutrients found in the water, can lead to explosive growth of algae and the resultant negative impacts on water recreational uses, water clarity, and park visitors.

Storm weirs: In accordance with Water Board 70-14, the City of Berkeley is prohibited from discharging storm water containing waste into the Aquatic Park lagoon. Historically this was accomplished through a series of hand-operated weirs. The two weirs on the Potter Storm Drain were regularly closed off with every rainfall for many decades, but over a decade ago were removed in what was said at the time to be a temporary summertime experiment to improve the tidal circulation. There was no notice to Council or to the Water Board of this change. With the first rainfall, the damage to the biological resource became apparent, as contaminated storm water runoff now poured unimpeded into the park with each rainstorm. The visible aspect was the amount of trash brought in, but the additional damage was due to the other metal and chemical pollutants not readily visible. Higher lagoon

flood levels since then have contributed to shoreline collapse as trails, utility lines, roadways, and vegetation have lost their solid ground and collapsed into the bay or along the shore. Damage is particularly visible along the entire eastern shore, where wind and waves during flood conditions have left a line of damage to the park and its infrastructure. Replacement of these two weirs on Potter, perhaps with automated, low-maintenance weirs should be studied, as they could block storm water without giving the City the ability / requirement to increase its non-permitted discharges.

The weir system on Strawberry has not been well discussed during the APIP process. Opening that storm drain to greater discharge into the lagoon was only added later in the process. A removable wooden beam controls the level at which storm water discharge to the lagoon occurs, as does a flap over a small opening, but there has been no discussion of when these actions take place or how they are decided. To be in compliance with the State of California San Francisco Bay Regional Water Quality Control Board's discharge prohibition, the EIR must study a gate that will be closed to all discharges, perhaps automatically. A weir that operates only one way – outbound from the lagoon through a fully widened connection to the Strawberry Storm Drain – is a simple structure that would increase circulation through the two-lagoon system, but would not allow prohibited toxic pollutants into the park.

Equalization tubes: When the long east-west dock originally separating the Model Yacht Basin from the Main Lagoon was filled to build a roadway, two equalization tubes were built to continue the flow of tidal water. They held manually operated gates on their southern sides in order to block the spread of contaminated water. These gates were removed, but never replaced. Any project proposal should include study of replacement of these gates. If the two pipes are replaced by a single, slightly larger pipe, this new pipe should have the same ability to control flow, perhaps on both sides to allow for continued operation while one is being repaired. This pipe should be sized to accommodate the expected increase in tidal flows, not to support the movement of prohibited storm water flows. If the EIR studies building a channel, spanned by a bridge to carry emergency vehicle traffic, the alleged benefits of this greatly increased expense should be weighed against its inevitable use to move polluted storm water runoff from the Potter Storm Drain into the Main Lagoon. That bridge must accommodate the telephone line that runs on the south side of Bolivar Drive, the irrigation system for the City's wildlife habitat restoration project on both side of Bolivar, and other utility lines such as the electric conduit along the north side of Bolivar, which may have been abandoned.

The flow of tidal water through the existing equalization tubes makes both side of both tubes prime feeding grounds for wading birds in search of fish attracted by the flow. They also are prime destinations for visitors enjoying views of the water and birders who can see the egrets and herons feeding up close. Any channel should consider features that make it both bird friendly and incorporates visitor overlooks and staff maintenance needs. Gentle, terraced slopes would allow the birds feeding

along the shoreline to also feed and rest on the dry land as occurs along other nearby shoreline edges. Such terraces also allow birders to settle in along the shore, watching the birds with minimized impact. Native shoreline plantings should be incorporated to provide screening for birds feeding and resting along the channel. The bridge structure should acknowledge that this new wide opening (the consultant hydrologist has told the City it will need to be 25 feet wide, not 20) would be a primary flight route for the many birds that move regularly between the MYB and the Main Lagoon.

Storm Water Pipe Access Covers: The access covers to both the Potter Storm Drain and the techite “diversion” pipe have been used at time to discharge storm water along parklands. The EIR should consider options where these access covers are sealed, as was the case in previous years. This includes again solidly locking in place the covers of the “diversion” pipe, as well as locking in place the covers above the Potter Drain that are in the park. The easternmost cover has been replaced with a grated opening and the next one to the west has no locking mechanism whatsoever. This operational decision brings non-permitted storm water discharges pouring into parklands unimpeded. Collapse of the shoreline supporting the storm drain just north of the gated access opening shows the long-term damage being caused, as does the unrepaired collapse of the southern embankment of the Potter Street opposite the next unsealed access cover. The EIR should study the option where all access covers to Potter and the “diversion” pipe are again effectively sealed to prevent the discharge of storm water. It should also study the operational impacts of using the access covers as additional, uncontrolled storm water discharge valves. This would include infrastructure damages caused by the erosion of the shoreline, such as the collapse of the southern side of Potter Street and the collapse of the embankment that supports the Potter Drain, the sewage line, and irrigation and electrical lines running next to the currently gated opening.

Dredging: Increased circulation will increase the rate of sedimentation in the lagoons and ultimately destroy its value as deepwater habitat for the migratory birds that migrate through or overwinter each year. Staff dredging practices must be considered as part of the project EIR. The Aquatic Park Water Quality Study of December 1994 states, “Dredging would ultimately be necessary to prevent filling of the Main Lagoon and the Model Yacht Basin.” (Page 1-4) Dredging has been done at only two locations since a major dredge of the Main Lagoon in the 1960’s. Those spots are at the outlet of the Strawberry storm water overflow drain at the foot of Addison Street and of the biologically rich mudflats near Bird Island. No biological benefits are obvious from the expensive work at these two locations and there may be negative habitat impacts from the historic disposal of the spoils on the western shore of the Main Lagoon, adjacent to the primary shorebird feeding grounds.

Pruning of Shoreline Vegetation: Feeding and roosting locations for aquatic birds and other wildlife are compromised by the City vegetation management practice of the removal of branches that provide screening along the shoreline, creeklets, and freshwater wetlands. The EIR must consider the impact of these practices; clean,

non-polluted water in the lagoon that circulates well with the waters of the open bay is of limited value for wildlife when native vegetation that provides screening for protected foraging and roosting is removed without ongoing replanting of effective screening.

Material Disposal: According to former City Manager Weldon Rucker, Aquatic Park is the dumpsite for the City of Berkeley. Historically the park's lands are used for long-term storage and disposal of materials no longer needed including soil, rock, green debris, wood chips, dredge spoils, scrap metal, and asphalt. The impacts of this function are inter-related with the habitat issues being studied in the EIR. Asphalt disposal along the shoreline of the southern two ponds – now currently on hiatus – exacerbates soil erosion and converts deep-water habitat to shallow waters subject to overheating during warm weather. Will material excavated during construction be disposed of within the park? What testing for hazardous substances will be done? What capping of the material will occur?

Sewage Discharges: Fecal coliform bacteria enter the lagoon not only from storm water runoff, but also from sewage pipes east of the lagoons that require modernization. The sewage pipe at the park's northern end, from the playground to Addison, was recently replaced with a new pipe, but the pipe at the southern end is blocked, potentially leaking raw sewage into the MYB. East of the railroad tracks, other pipes allowed to fall into disrepair leak raw sewage that reaches the Main Lagoon. During the project study period, the lagoon was closed to water recreation for several days during a leak of a City sewage pipe near the Bayer campus. Water recreation is a listed beneficial use of the lagoon and it was constructed with beaches at multiple locations, but in recent years the City has posted no swimming signs to prevent liability for not controlling the flow of sewage into the lagoon. The City Health Department keeps records of bacterial contamination in the lagoons; those levels and their impacts should be documented in the EIR.

Background Information

Fish: The fish at the park have never been studied. The actual habitat impacts of the existing tidal circulation patterns on the fish should be examined for confirmation through scientific observation. Claims of the toxicity of seasonally high water temperatures are not supported by fish deaths. Rather, it would appear that when shallow waters become too warm, fish easily swim to deeper, cooler waters. This seasonal migration is not limited to Aquatic Park, but occurs throughout the Bay and indeed throughout the world. Maintenance of adequate deepwater habitat within the lagoons should be a project goal. It would seem inappropriate to base a large-scale circulation project on a theoretical threat that has not been observed to cause fish deaths when culverts are cleaned annually.

On the contrary, during the project study period, there were three separate incidents where there were numbers of fish that died throughout the two-lagoon system at the same time. Each of these fish kills was said at the time by both City staff and wildlife biologist consultants to be most likely caused by the sudden

freshwater inflows during storms and the resultant loss of the levels of salinity required by the fish.

No fish kills have been reported in the Radio Tower Pond, despite its compromised circulation and extremely shallow water. Recently four great egrets and a dozen snowy egrets were observed feeding in the RTP, more than at any other location in the park. This was despite the many consecutive days of warm temperatures and the highly visible algal growth. The Radio Tower Pond also provides good fish hunting for pelicans whose numbers in the park are highest during the hottest weather. The Radio Tower Pond, which receives no direct storm water discharges, has had no documented fish kills.

It is storm water discharges that have been implicated in fish deaths, not high temperatures. Such actual habitat damage is a reason such discharges to the park have been permanently banned by the Regional Water Quality Control Board.

Aquatic birds: Few water birds are in the park in the summer when high water temperatures would be a cause of concern. Most water birds are in the park in the winter months when high temperatures / low DO are not a problem. There has been no observed decrease in summer egrets. There has been no observed decrease in summer herons. There has been no observed decrease in summer pelicans. There has been no observed decrease in summer avocets. There has been no observed decrease in summer cormorants. There has been no observed decrease in summer terns. These birds all eat fish, yet their summer numbers have not changed, regardless of the tidal circulation volumes.

The single observed change in bird population has been a large decrease in the number of winter egrets, documented by the annual Christmas Count conducted by Golden Gate Audubon Society. Discharges of storm water into the shallow lagoons can be toxic to the fish and other marine life that egrets feed on.

Rooted Aquatic Vegetation: Removal of rooted aquatic vegetation was the primary reason given the first time that this proposal of opening up the storm drains into the park was studied in the Aquatic Park Water Quality Study in 1994. The recent consultant presentation to Council referred to the bad smells in the park from the decay of the vegetation as demonstration of the need for the project. During the APIP study process, the smells were explained as a natural process and that fact was to appear on interpretive signage for the public. The report summary of the 1994 attempt to widen the floodgates into Aquatic Park even states on page 1-3, "Interpretive signs could also be posted to inform Park user that the growth and decay of the rooted aquatic plants (and their production of odor) is a natural process." In the section on "Water Movement and Quality in Aquatic Park" on page 3-1, the text goes on to clarify, "Rooted aquatic plants are beneficial for fish and some birds," and "Annual die-off of plant stems and leaves occurs in late summer and is a normal process for these plants." Perhaps more significantly, the rooted aquatic vegetation's use nutrients brought in by tidal circulation and by non-

permitted storm water discharges. Their healthy presence “tends to control algae because they can outcompete algae for light and nutrients.” (Page 3-3) The EIR must accurately characterize the relationships between rooted aquatic vegetation, algal growth, annual plant harvesting, and increased nutrient levels expected by greater tidal circulation and storm water discharge.

Dredging: Regular dredging of accumulated sediment is required in order to maintain the health of the lagoons as deepwater habitat. Dredging was a primary focus of the 1994 Water Quality Study, but it was taken off the table for discussion during the APIP process. That being said, the City hired contractors to dredge accumulated sediment and debris around the Strawberry Storm Drain Overflow Pipe at the foot of Addison Street during the planning process. The contract including dredging the rich aquatic bird feeding grounds between Bird Island and the five tide tubes, but this dredging is still pending. Dredging consideration should focus on creating safe, deepwater refuges for birds, not for speeding the discharge of storm water or for removing significant feeding grounds.

The APIP planning process mentioned “sediment traps” as part of the circulation project. These should be studied in the EIR or their rejection explained.

Disposal of dredging spoils can be expensive. Historically, the City has taken them to the bluff north of the Berkeley Paddling and Rowing Club for dewatering and then spread them on the site. Seasonal high water temperatures, particularly in shallow waters, have been stated as the primary reason this time for the proposal to open the storm drains to the park’s lagoons. Increasing the tidal circulation will increase the rate of sedimentation. Higher lagoon levels due to higher tides or floodwater discharges will exacerbate shoreline collapse, reducing water depth adjacent to shorelines. The EIR must consider the interrelationships of sedimentation, shoreline collapse, shallow water, seasonal high water temperatures, and dredging to protect the long-term health of the deepwater habitat required by the migratory waterfowl.

Aquatic Habitat Limitations: The APIP Summary Report states, “A lack of water circulation and very small daily tidal volume are the main causes of poor aquatic habitat conditions.” This statement forms the basis of the proposal to open up large storm water discharge valves into the park’s lagoons, but it lacks supporting evidence. The lagoons are home to countless fish and hundreds of aquatic birds pass through and overwinter during the non-breeding season, with the existing circulation volumes. Fish-eating birds appear to find plenty of food, even during the periods when water temperatures in shallow areas briefly rise during heat waves. What evidence is there that the current level of tidal exchange (with all pipes cleaned annually) causes fish deaths? It would seem that during the hours when water temperatures reduce plentiful oxygen levels that fish merely move a few feet away into deeper, oxygen-rich water. The lagoons in the park appear to support far more aquatic birds than areas of comparable size west of I-80, despite complete water circulation in those locations. The EIR must distinguish between the different types of water birds, the types of food they eat, the locations in which they find their

food, and the project impacts on those food sources.

The EIR must accurately acknowledge the role of various limitations on the wildlife population. Loss of shoreline vegetative screening reduces protected areas for waterfowl to forage and roost. Mitigation for the project must call for a park wide replanting plan. Such revegetation must include a management plan for the 10-year installation schedule identified in the NRMS.

Circulation volumes have been cited as problematic because they can lead to seasonal high water temperatures. A secondary reason mentioned by staff is to open the storm drain connections to the lagoons is to more quickly clean out pollutants from the lagoons. Best Management Practices suggest that prohibiting the entrance of pollutants into the lagoons is preferable to attempting to clean out pollutants.

The NRMS itself deals extensively with a number of other conditions that reduce the aquatic habitat and there are other causes those consultants were not asked to study or comment on. Lack of native vegetative shoreline screening of feeding and roosting areas from visitor activity has been widely acknowledged in the NRMS and other studies. Degradation and loss of protected offshore roosts reduces safe refuges for water birds. Access to sheltered fresh water has been suggested as a cause of duckling mortality: the many creeklets are regularly shorn of their screening vegetation. Most significantly, non-permitted storm water discharges introduce a host of pollutants toxic to marine life and change the salinity of the lagoons. Consultants and staff have stated the fresh water discharges by themselves as the probable cause of all fish kills during the project study period, because they alter they rapidly alter the salinity levels required by some marine life. Pollutants can bind to clay particles and enter the sediments, forming a permanent impediment to the health of the benthic organisms and the birds that depend on them for food.

Legal questions: The City's legal department has shown Council the MOU with Caltrans showing that maintenance of the culverts has always been the responsibility of Caltrans. If the City wants to repair these pipes, state bond funding such as provided by the Coastal Conservancy may not legally be used. Further, any construction may then switch the maintenance responsibility to the City in perpetuity. Such issues must be addressed directly before Council agrees to make such a decision.

Three Additional Projects

The original Notice of Preparation mentioned three projects for environmental review of which little description has been provided to date. It is difficult for the public to provide comments for projects that have not been clearly defined.

New storm drain outlet to Radio Tower Pond: The Water Board regulator for this project wrote in his initial project comments to the City on June 6, 2007 that, "Repair of the tide tube is preferable to a new connection between RTP and the

Potter Street storm drain. Since the RTP does not presently receive storm water from Potter Street, it seems that maintaining current storm water inputs to the RTP would mean that no new connection to the storm drain system should be installed to the RTP.” A floodgate on Potter that allows the City to discharge storm water containing waste into the RTP would likely be used to release flood waters. This project does not appear in the preferred “no discharge” project description approved by both Parks and Recreation Commission and the City Council. The fact that it appears in the alternate staff recommendation that allows storm water discharge into the park indicates the project is designed to use the RTP as a storm surge basin. So does the proposal to build an earth berm around the radio station building tall enough to accommodate the release and temporary storage of flood waters, but far higher than any expected tidal levels.

In their presentation to the City Council, City consultants stated that the RTP has the worst water quality of the three ponds. There has been no documentation of this claim or explanation of the origin of this charge. The water quality of the RTP was not studied in the Aquatic Park Water Quality Study, as part of the NRMS, nor in any of the data published as part of the APIP proposal. The EIR must include analysis of all information about the pond’s water quality that City consultants have studied or learned, including all data that has not yet been shown to the City Council or Water Board regulator.

The RTP receives no direct discharge of polluted storm water from the Potter Storm Drain, so by that primary measure it has the cleanest water of the three ponds. Observation of wildlife suggested that it supports a thriving ecosystem of aquatic life. Shorebirds regularly feed in its shallows, sometimes numbering in the hundreds. Last week, four great egrets and a dozen snowy egrets were all successfully feeding in the pond at the same time. Night herons feed in the pond’s waters as well, and a great blue heron regularly feeds and roosts in the pond. Rays have been seen swimming in the pond and none have turned up dead, as is the case in the Main Lagoon and the RYB following rainstorms during the study period. Ducks nest successfully each year along the pond’s edge. The large, flat, grassy peninsula at the pond’s western end is a primary roosting site for a range of aquatic birds, including great egrets, snowy egrets, a great blue heron, Canada geese, ducks, and a range of other birds. So are the grassy, shoreline areas on the pond’s southern shore. The line of posts from a former dock that run north to south along the pond’s eastern shore are primary roosting sites for egrets, herons, and other aquatic birds. So are the mature Monterey Cypress trees whose branches overlook the pond, including those on the north shore, the single tree near the tide tube inlet, and those along the southern shore, although recent tree work has removed significant roosting trees and branches. Other tree work has removed the grove of trees formerly used for egret roosting on the pond’s western slope; Caltrans is legally required to replace this vegetation that they removed when they realigned the Ashby onramp.

The biological heart of the pond is in its northwest corner where the remnants of Potter Creek reach the bay. There is a dense willow grove there that serves as a widely known group roost for black-crowned night herons of the region. During the non-breeding season, several dozen birds roost in the willow branches that hang out over the waters of the pond. Great egrets, snowy egrets, and a great blue heron, also roost in these trees. The grove is widely known for the large flock of red-winged blackbirds that at times fill the trees with a loud chorus of calls. A few years back a rare warbler typically seen only in the east made its home in the willow branches, attracting hundreds of birders to the shoreline trail through the grove. Ducks have nested in the grove and adults bring their newly hatched ducklings to feed in the tangle of branches out over the water. The biological richness of this willow grove has been identified in other studies of the park and its significance has been mentioned in previous City grant applications.

The EIR must study any impacts on all of these roosting, feeding, and nesting sites, including the health of the vegetation when submerged in water. The impacts to vegetation of salt-water intrusion into areas that are now generally dry land should be considered. Impacts of all of the contaminants contained in Berkeley's urban runoff must be considered. So should the shoreline impacts expected by higher tidal levels and new flood levels.

The EIR must include study of all the interrelated water quality components to be studied in the other lagoons and all the expected impacts previously mentioned concerning storm water discharges into the Main Lagoon and the MYB. This includes the related impacts of runoff from the Caltrans right-of-way. One significant issue for this pond is the issue of water depth. What are the tidal levels expected? What are the expected lagoon levels during flood conditions when the capacity of Potter is increased by discharging polluted storm water runoff into the RTP?

An alternative project to be considered is dredging of the RTP to reduce water temperatures in hot weather and to create safe refuges for fish in those few days a year when shallow waters become too warm to hold sufficient oxygen for fish. The spoils have a logical place for disposal, the primary location where they originated – the northern slope of the pond. Unlocked access covers on the top of the Potter Storm Drain allow storm water during flood conditions to flow out the top of the pipe, and southward down this slope. This pond's northern slope – consisting largely of unconsolidated sand and loose soil – has collapsed over the years into the pond and been a primary source of the rapid sedimentation of the pond. If placed on the northern slope of the pond, the spoils can rebuild the collapsed hillside, form terraced seating for birders and other park visitors, and restored damaged shoreline trails.

The EIR must compare construction of the proposed storm water discharge valve with maintenance and better management of the existing tide tube. The gate that once controlled the flow of tidewater could be replaced and used to close off flow

through the culvert when oil spills, red tides, or other water contamination occurs in the open bay.

The RTP ownership is shared between the City of Berkeley and Inner City Broadcasting Corporation and the EIR should study all impacts on the adjacent property owner's property. This includes any damage caused by higher tide levels and new flood levels to their property and its vegetation, its parking lot, the many bird roosts on their property, and the array of underground copper wires that radiate from the transmission tower and are a basic part of the propagation of the AM signals. Does proposed berming around the building and above the copper wires affect the strength of the signal? The EIR should document the ownership issues and give some written proof by the owners showing they are aware of the likelihood of regular flooding of their property and the expected damages. One NOP mailing list did not immediately appear to show that they have been notified of the comment period.

Another party that requires NOP notification is Caltrans. They constructed the tide tubes and according to signed documents from Berkeley's legal department and presented to the Parks Commission, Caltrans has legal responsibility for maintenance of the tide tube to the RTP, the one to the MYB and the six culverts connecting the Main Lagoon to the open areas of San Francisco Bay.

By constructing an alternate method of tidal flow, and allowing Caltrans to abandon the culvert it has maintained since its construction in 1937, without requiring them to safely and cleanly manage the new gate, the City will be taking on a new maintenance responsibility in perpetuity. This financial impact on the City's budget, and the resulting reductions in other services in order to cover it, must be presented to the Council in order for them to make a decision that weighs all impacts.

Best Management Practices in the Watershed area that is directly tributary to the Aquatic Park lagoons: This project requires better description in order to elicit comments for environmental considerations, alternatives and mitigations. It is not obvious to what set of project it refers.

The APIP Summary Report on page 8 says, *"As an optional APIP component vortex filters could be installed on the storm pipes on the upslope/east side of the railroad berm at the Bancroft, Dwight, and Channing Street stormdrains and in the park to replace the oil/water separators on the Heinz, Grayson, Carleton, and Parker Street stormdrains. These filters would remove trash, large particulates, and oil and grease and would consist of a unit placed in the stormdrain as an in-line facility or next to the pipe as an off-line unit. The vortex filters would not remove the small particulates which transport many of the persistent pollutants; thus, this type of filter would not take the place of the biofilters but could provide treatment while the biofilter improvements are installed."* Are these the BMP's that are being studied in the EIR? While removal of trash and large particulates from the runoff would be helpful, it is

not apparent that this system would remove all polluting waste materials from the storm water, and thus be in compliance with the Water Board Order 70-14.

If this is the project being studied, the EIR should consider how the vortex filters would be managed and maintained. The existing oil/water separators they are replacing do not function due to lack of maintenance and it is unclear how the Council could expect anything different from the new filters. The EIR should study the current filters and view the photos of their conditions as was presented to the public during the APIP planning process to assess if and how different management of the proposed vortex filters could be successful. If abandoned in place, as the current filters are, that impact over time must be acknowledged.

Or perhaps the project description in the NOP refers to the biofiltration methods mentioned on page 8 of the APIP Summary Report directly before the section that describes the vortex filters. *"The urban streets, parking lots, and buildings of the local watershed could be retrofitted with stormwater biofiltration facilities. Biofiltration facilities provide treatment of stormwater as it flows along streets and through parking lots and before it enters the stormdrain system. Biofiltration facilities provide a medium which can rapidly and effectively filter out trash and a high percentage of the fine sediment particles, bacteria, and nutrients, and biologically treat these contaminants. Biofiltration facilities have been found to remove 80 percent or greater of the total suspended sediments (TSS) from stormwater and therefore a high percentage of the metals, nutrients, pesticides, coliform bacteria, oil and gas, and other contaminants. For the Aquatic Park local watershed, design of these facilities will need to take into account soil conditions, rainfall amounts, land uses, utility and pipe systems, land ownership, and overall redevelopment planning. Additional stormwater facilities that could be included in the Aquatic Park local watershed are stormwater detention facilities such as cisterns and rain barrels, as well as residential and even commercial use of porous pavement, rain gardens, and grassy swales. All of these measures will need to be retrofit into the Aquatic Park local watershed to effectively filter contaminants out before stormwater reaches the lagoon system. This watershed is ultra-urban: it contains no open land and is almost entirely paved over."*

Various methods of water detention and biofiltration have great potential to reduce pollutant levels in the storm water runoff from the City of Berkeley. This limited description is too vague and all encompassing to elicit meaningful comments about areas of impact to be studied, alternative project proposals, and suggestions for project mitigations. The description itself suggests the complex array of impacts that its implementation will involve. Maintenance and management of these projects should be foremost. Storm water discharge permitting issues must also be considered. Are there impacts on traffic caused by these detention and filtration ponds? What about on neighborhood residents and employees? Will these ditches be fenced off to prevent access by the public? How would the remaining 20% of pollutants be handled – does the project proposal anticipate they be discharged into the lagoon without further treatment of the waste? Such discharges would appear to be in violation of Water Board Order 70-14.

Or perhaps the project description in the NOP refers rather to the text of the "West Berkeley Stormwater Biofiltration Proposal" dated July 11, 2008, which City staff submitted to the Water Board in a preliminary grant inquiry. According to the portion concerning the City's NPDES storm water permit, "The work described in this proposal will only take place within the City's public rights-of-way." The same concerns just mentioned would apply.

It should also be acknowledged in the EIR that any temporary detention of storm water east of the train tracks does not necessarily result in any improvement to the water quality of the lagoon. When the flow of storm runoff into the park from the immediately adjacent blocks are slowed or delayed, that reduces the water level of the lagoon and it allows for the increased flow of untreated runoff from Potter through the techite "diversion" pipe and from the two connections to Potter.

One alternative project to be considered in the EIR is the diversion of all tributary storm water from the adjacent watersheds out to the two bracketing storm drains where they will be piped to the open bay. This is the only option – aside from complete filtration of all storm water in a way that can be successfully managed and maintained in perpetuity – that is in compliance with both State orders and the environmental standards of the community. This diversion cannot take place within the park, as the techite "diversion" pipe – which actually worsens water quality by diverting water into the lagoons – demonstrates. It must occur through a series of smaller diversion pipes in the many blocks east of the park at higher elevations. And it only works if the two storm drains have adequate capacity to receive them, so this option should include a pumping system within the drains themselves, as mentioned by the hydrologist in the APIP presentation to City Council.

Construction of created wetlands at Bird Island using excavated soil from within the lagoons: This text refers to a project proposal that, to my knowledge, has never been presented to any group or in any report. This project requires better description in order to elicit comments for environmental considerations, alternatives, and mitigations. Since the only water at the island is EBMUD water, it would appear this project description must refer to tidal wetlands rather than freshwater wetlands. Would the wetlands be connected extensions of the island or freestanding mounds offshore of the island? What would their elevation be? How often would they be submerged and how often would they be dry? How would they be built? Would there be a constructed framework to hold the spoils in place and prevent them from eroding back into the deeper portions of the Main Lagoon? What types of toxics in the dredge spoils would be analyzed before use? What levels of those toxics would be permissible to use? Would the spoils be capped in any way? What habitat benefits would the City expect from disposal of the spoils in such a location? An option to be considered in the EIR is to use clean fill, rather than contaminated spoils. The EIR should address the fact that due to the size and elevation of the tide tube openings on the bay side that the park's lagoons have long periods of consistently higher tides and long periods of consistently lower tides.

This tidal regime makes creation of biologically healthy tidal wetlands in the park difficult to maintain because the tidal areas experience long periods of flooding and long periods of desiccation. What are the recreational impacts on water sports of creating these wetlands? Will these wetlands become invisible hazards for rowers, paddlers, and kayakers when under high tides or flood discharges at each end of the two-lagoon system? How would the water skiers be affected? Their dock and slalom course are around and immediately adjacent to Bird Island.

Perhaps the NOP had a typographical error and the word wetlands was actually intended to have been uplands; perhaps the City is proposing putting the spoils on top of Bird Island. Such an error calls into question the legal validity of the comment period on this proposal, since placing the dredge spoils on top of the island is a very different project from creating wetlands and this project should be re-circulated for comment. Raising the elevation of Bird Island through re-use of material excavated from elsewhere in the park has been mentioned before, but never through the use of contaminated dredge spoils. If this is the new project proposal being studied in the EIR, then many of the same questions mentioned in the previous paragraph apply. Would there be a constructed framework to hold the spoils in place and prevent them from eroding back into the deeper portions of the Main Lagoon? What types of toxics in the dredge spoils would be analyzed before use? What levels of those toxics would be permissible to use? Would the spoils be capped in any way? What habitat benefits would the City expect from disposal of the spoils in such a location? An option to be considered in the EIR is to use clean fill, rather than contaminated spoils.

What is the proposed height to which Bird Island would be filled? It would appear to have limited capacity to hold a large volume of dredge spoils. A tall mound may be able to accommodate a larger amount of the City's dredging spoils and thus have a cost savings for the City over paying for disposal at the required level of waste disposal site. But it may directly reduce the island's attractiveness for birds. What would the edge of the island look like under this proposal? Would it be a steep and tall riprap levee difficult for ducks to mount? The gentle, naturalistic, planted shoreline of the park's lagoons is a reason why birds live in the park, rather than in along the steep, unplanted riprap along much of Berkeley's shoreline with San Francisco Bay. The EIR should consider options that make the island's shoreline bird friendly and that accommodates their habitat needs.

What is the source of the spoils? Would it use the pile currently being stored on the western shore? Would it be from new dredging? Or would the fill instead not come from dredging as mentioned in the NOP, but be excavated from the City's longtime disposal site on land north of the Berkeley Paddling and Rowing Club. This is the only source of fill ever discussed in the APIP process. The EIR should consider variations in the location and depth of new dredging of the lagoon, as dredging in the lagoon was explicitly excluded from discussion in the APIP study process. Dredging of the Water Ski Club's slalom course might be beneficial as it could reduce

the growth of aquatic vegetation along the one area of the park they use. It should also analyze the project using clean fill as an option.

Would all manmade structures be demolished, removed from the island, and properly disposed of? Does the project proposal call for abandoning and burying any of it on the island? If asphalt is abandoned and buried under the dredge spoils, what impacts might it have on the vegetation to be planted above? What planting scheme is anticipated? Islands play a special role as safe roosting and nesting spots for aquatic birds, and the tree planting should account for the specific nesting needs of the egrets and herons, which have groups roosts in the park, but whose breeding adults currently leave the park each spring to wooded islands elsewhere for nesting. Egrets and herons in the park generally roost in Monterey Cypress branches that hang out low over the water. The report should consider options that plant the entire shoreline of the island in Cypress trees at low enough elevations so that the branches of the trees grow out just above the water. Such planting has the added advantage of creating safe harbors for ducks and other aquatic birds to feed and rest. Additional trees can be installed at higher elevations to guarantee mature vegetation as ocean levels rise.

The EIR should consider the recreational impacts of this project, if indeed that is where the City is attempting to dispose of its spoils. In particular, the Berkeley Water Ski Club currently has a lease to use the island, although they have expressed a willingness to cede the island from their leasehold if the City wishes to convert it to nesting for egrets and herons. How would the water skiers be affected? Their dock and slalom course are around and immediately adjacent to Bird Island and they have used the island for decades for tournaments and other events.

What is the installation and management plan during the project's first several years while the Cypress trees are being established? Would the existing EBMUD pipe be used for irrigation? How would the caretakers of the island's vegetation reach it for controlling invasive non-native plants? There is an existing bridge that can be swung into place, but the Berkeley Water Ski Club may own it and it may require use of a boat to swing it into place. Would the island have a simple dock for use by staff / habitat management crews? What would be the fate of the existing bridge once the island no longer needs regular management visits? The utility of the island for safe resting and nesting of aquatic birds depends on the island being completely surrounded by water and inaccessible to predators. The EIR should consider how and when the bridge would be permanently removed and how staff would access the island for emergencies thereafter. Would the eventual removal of the bridge impact the water skiers?

Lower cost disposal of dredge spoils is one purpose that is clearly being met by this proposal. In fact, disposal of the spoils is really all that is mentioned in the project description in the original NOP. Reuse of dredge spoils on or near Bird Island must be compared to reuse at other locations throughout the park. Planning studies for decades have called for re-contouring portions of the park to improve its habitat

value and visitor features. Birds feeding and roosting along shoreline areas could be better buffered from visitor impacts if earth berms, capped with clean fill if required by contaminant levels and planted with native vegetation, were constructed between the shoreline and visitor trails and activity areas. In wider areas, the park can accommodate larger, taller berms that are constructed between the shoreline footpath and the paved trail / roadway. In fact, during the planning process for a “living wall” earth berm along the park’s west side to buffer freeway noise, the final alignment called for a long berm in the very area where the recent spoils were dewatered for nearly two years. The EBMUD interceptor sewer line crosses under the freeway edge there, limiting the ability for the City to construct the earth berm sound wall along the right-of-way line. The final berm alignment was just east of the EBMUD sewage line and paved road, but west of the shoreline trail, creating a long, sheltered area for visitors to watch birds at the primary shorebird feeding area, while being buffered from the freeway noise. A key feature of the berm was that it would be built with a long, gentle slope, parallel to the freeway, such that it would accommodate a footpath and seating along its entire length and create a high overlook of the shorebirds at that end of the lagoon. Another location where very large amounts of dredge spoils could be disposed of is on the east side of the park, west of the end of Heinz. A very large berm built against the railroad berm could accommodate many birders overlooking the egrets and herons feeding at the park’s southern end with no disturbance to the wildlife. This berm is detailed in the Aquatic Park Master Plan and came very close in scoring to receiving funding by the City’s PERS refund park’s projects. There are other shoreline areas throughout the park that could receive dredge spoils constructed so that the berms support layers of buffered visitor seating terraces on the water side of the berm and shelters the birds and bird watchers from disc golfers, dog walkers, cyclists, and other traffic on the adjacent paved trail.

An option to be studied is to use the spoils in the Main Lagoon not to create wetlands, but to create new islands to complement Bird Island. Islands play an incomparable role for safe roosting and nesting of aquatic birds, as they do not allow easy access for predators. And while Bird Island has been designated to be planted out with Monterey Cypress trees for roosting and nesting by the park’s iconic egrets and herons, other islands could be covered in low vegetation or grasses to support ducks or other birds. As with the Bird Island project, the option of using clean fill should also be explored.

Base Line and Post-Construction Monitoring

Staff proposed extensive base line monitoring when the project to widen the storm drain outlets into the lagoons was first prepared for the Aquatic Park Subcommittee in June 2007. The Water Board’s regulator recommended additional studies. All these studies should be carried out for the stated two-year period and the analysis presented to Council prior to any project decision.

The Aquatic Park Water Quality Study of December 1994 was the first attempt by the City to open these large storm water outlets into the park. The stand-alone

Appendix D is a project Operational and Management Plan and all its elements should be considered by the EIR, including its monitoring plan. If the City wishes to “adaptively manage” the new structures in alternative ways in the future, those options must be based on an extensive record of baseline monitoring and post-construction monitoring.

Alternate Projects to Study for Comparison of Impacts

The EIR should study alternative projects that improve the habitat value of the lagoons. A one-way flow pattern outbound into the Strawberry Storm Drain through a widened connection with a unidirectional gate must be modeled for its impacts.

Repair and Resume Annual Cleaning of Existing System / No Discharge: The 1994 Aquatic Park Water Quality Study resulted in a decision by Council to not widen the connections to the storm drains due to the negative impacts of storm water discharge on wildlife. City Council chose instead regular cleaning of the existing system, with repair or replacement of needed parts. The project EIR should consider this as an option to be analyzed besides the “no project” option. This option includes replacement of the original Potter storm water gates into the MYB with no increase in culvert size and resumption of their use to block storm water discharges. It also means a resumption of the annual cleaning of marine growth from all pipes so that tidal flow is maximized. When all pipes are cleaned annually, no fish deaths have been reported. This “Repair and Clean Annually” option should also include repair of the original gates on the equalization tubes between the MYB and the Main Lagoon.

One-way Outbound to Strawberry through wider connection: The EIR should study all one-way outbound options, as requested by the Water Board regulator in his initial project comments to the City June 6, 2008. The primary version to be modeled and analyzed in the EIR is the one extensively discussed in the APIP planning process – the one-way outbound to Strawberry Storm Drain. As called for in 4B, the connection between the drain and the park is improved by removing the concrete wall separating Strawberry Storm Drain from the Overflow Pipe beneath Second Street. A one-way weir – outbound from the park to the storm drain – is installed in the pipe, instituting a south to north flow through the two-lagoon system. The “One-way Outbound to Strawberry” option could also include a variant that has no net change in overflow storm water discharges from Strawberry into the park.

Other one-way outbound options: The Water Board regulator also requested the one-way outbound to Potter (with either current size openings or with larger openings) also be studied, as well as both Strawberry and Potter one-way outbound options together. The connection between the Main Lagoon and the MYB could be modeled with a pipe suitably sized for tidal flow, rather than a flow channel sized to carry storm water from Potter into the Main Lagoon.

Project Mitigations

The APIP planning process produced a number of proposals to improve the habitat value of the park for the aquatic birds. The only projects that remain are those that use the lagoon for flood control or the area near Bird Island for disposal of contaminated dredge spoils. Without any Council discussion, those other habitat proposals have been dropped from environmental review so they cannot be directly compared with the hydrology proposals as to risks and benefits. Any hydrology project that increases tidal flow beyond lagoon design levels will likely trigger negative impacts on the waterfowl, so those other proposals should be installed as project mitigations, if not studied directly as project alternatives, as the commissioners were assured by staff they would be.

Shoreline planting and armoring: Plant all shorelines aside from visitor seating terraces / wildlife overlooks with Monterey Cypress trees, with their lower branches allowed to remain untrimmed, to replace roosting for egrets and herons, lost to higher lagoon levels and the resultant shoreline collapse. The shade provided by these plantings will help keep water temperatures cooler in shallow shoreline areas. Dense plantings out over the water also creates ideal roosting and feeding for many aquatic birds. Native shrubs planted inland from the shoreline trees will also increase safe refuge for water birds by discouraging entry for people and their dogs. In some areas, initial shoreline armoring to replace collapsed riprap edging may be required to support the trees and keep them from damage by higher waves due to increased lagoon levels from tides, floods, and sea level rise. All planting must include the ten-year installation period of control of invasive non-natives identified in the NRMS.

Enhancement of existing offshore roosts for water birds and construction of new ones: Higher lagoon levels mean frequent inundation of the safe, offshore roosts that currently serve as primary refuges for the parks water birds. This consist of bare islands with no vegetation, islands with only low vegetation that provides clear sightlines, rocks, and a host of manmade objects such as posts from collapsed docks, abandoned jetties, and collapsed shoreline riprap that now stands surrounded by water. Higher lagoon levels brought on by greater tidal exchange and floodwater discharges will mean the loss of these offshore roosts at the exact times they are most required by birds. Such roosts can be rocks, jetties, floating chained rafts, or constructed in a host of other ways. A project that was almost constructed as mitigation for the pedestrian / bicycle bridge over I-80 was creation of low islands by digging a moat to separate low-lying shoreline from the mainland. Such islands are easy to build and have enormous potential as safe roosts. Safe roosting areas can be entirely manmade, such as with anchored docks floating off the shoreline.

Shoreline visitor seating: The Coastal Conservancy told the City that they would be willing to fund at least three major shoreline wildlife overlooks as part of this project, and more if the City could make the case that this consolidated seating would improve wildlife habitat. Indeed, visitor disturbance of aquatic birds was well

documented in the NRMS. Birders, ironically, are primary disturbers of the birds. By consolidating visitors into terraced seat walls that accommodate many visitors at once, their impact on the resource is reduced. Their impact on the waterfowl can also be reduced if the seating is built into the landscape and buffered with vegetation from the immediate shore.

Planting along fresh water resources: Aquatic birds, such as parent mallards with ducklings in tow, seek fresh water along the park's east side. Any project that seeks to promote the health of these birds must include safe refuges along the freshwater creeklets and the freshwater marshes through dense planting of native vegetation to create screening for the birds from park visitors. This planting plan should also provide screening for field areas that are seasonally wet along the park's eastern side; these fields are primary feeding grounds for egrets and herons, particularly during the rainy season. All planting must include the ten-year installation period of control of invasive non-natives identified in the NRMS.

Dredging: The report should consider a guaranteed program of dredging where lagoon levels will be compromised by sedimentation over time.

Pumping of storm water: Pumping of flood water out to the open bay are said in the Storm Water Master Plan to be required to avoid deep flooding of the park during storms if the capacity of the storm drains is increased by diverting water to the park. The EIR should study not only pumping through a new pipe, but also pumping through smaller pipes inserted into the existing storm drains. This is the mitigation presented to Council at its recent presentation. It is also part of the Berkeley Fire Department's Saltwater Emergency Fire Protection Program.

Data to Show in the EIR

Water Quality Data: Water quality data on storm water entering Aquatic Park from the West Berkeley watershed was collected from 2006 through 2008 by the City of Berkeley in preparation for the Water Quality Improvement Project at Aquatic Park. It should include the data from the Aquatic Park Water Quality Study of 1994.

Tidal Maps: The EIR should include maps showing the expected high and low tide levels in all project alternatives: no project, one-way outbound through a widened Strawberry connection, 4B with no storm water discharge, 4B with no additional storm water discharge, and 4B with full storm water discharge. Maps should distinguish clearly the variations in lagoon levels that are caused by ocean tides and those caused by storm water discharge.

Bathymetric Maps: Maps should show the expected depth of the lagoons – in both low tide and high tide conditions – in all project alternatives: no project, one-way outbound through a widened Strawberry connection, 4B with no storm water discharge, 4B with no additional storm water discharge, and 4B with full storm

water discharge. Maps should distinguish clearly the variations in lagoon levels that are caused by ocean tides and those caused by storm water discharge.

Volumes of Tidal Water: The EIR should show a chart comparing the amount of water entering the lagoons during the “baseline” tidal flow with the amount of water entering the lagoons under the new tidal regimes. It should identify the amounts of tidal water coming into the lagoons from all sources – Potter, Strawberry and each of Caltrans’ tide tubes. The impacts of the increased circulation – such as sedimentation – are directly related to tidal volumes, so the comparison is important.

Construction Maps and Timelines: Maps should show project construction limits, including all staging areas. It should identify temporary and permanent changes to visitor access. It should call out traffic and visitor safety features to be implemented during construction and those that will remain permanently. It should identify the length of time expected to build each portion of the project and the time of year it is proposed to take place.

Documents to Address in the EIR

Water Board Order 70-14: The EIR must study options that conform to existing legal requirements prohibiting storm water discharge into the lagoons from all connections to the Potter and Strawberry Storm Drains and from the local Aquatic Park watershed between University and Ashby. If the City continues to assert that such discharges are permitted under 70-14, the EIR should include any communications from the Board indicating that this is the case. If the Board is required to vote to replace the discharge prohibition with a discharge permit, the process leading up to a vote should be detailed, including all opportunities for public comment.

APIP Project Description, June 2007. This is the document presented to the Commission and public in preparation for a final vote on project alternatives. Any project details that have been changed or eliminated since then must be called out in the EIR.

Project comments submitted to the City of Berkeley by Water Board regulator Brian Wines, June 2007. All comments by Water Board staff should be clearly and directly addressed in the EIR.

Project scoping comments submitted electronically to the City of Berkeley by Water Board Manager Dale Bowyer on July 31, 2009 (CIWQS Place ID No. 742107) All comments by Water Board staff should be clearly and directly addressed in the EIR.

Project comments by APIP Subcommittee Member Lisa Stephens submitted January 28, 2008 and approved by the full Parks and Recreation Commission for inclusion and consideration in the EIR.

West Berkeley Stormwater Biofiltration Proposal dated July 11, 2008, which City staff submitted to the Water Board in a preliminary grant inquiry.

Water quality data on storm water entering Aquatic Park from the West Berkeley watershed was collected from 2006 through 2008 by the City of Berkeley in preparation for the Water Quality Improvement Project at Aquatic Park: This data was mentioned in the City stormwater biofiltration proposal to the Water Board dated July 11, 2008, but has not yet been presented to the public. All data collected during that study should appear in the EIR for a complete understanding of the impacts of any project that allows for the discharge of storm water containing waste into the Aquatic Park. Charts of contaminants should compare them to water quality objectives in the Regional Water Quality Control Board's Basin Plan. It should also show the levels at which these contaminants become toxic to various forms of aquatic life and separate those that are short lived and those that and settle into the benthic layer and represent a more permanent contamination.

Aquatic Park Water Quality Study by CH2M HILL, 1994: This document contains analysis of storm water pollutants, sediment contaminants, and describes the many interrelated issues that impact water quality. The EIR should acknowledge and study the project's impact on these relationships or present evidence to refute that analysis.

City of Berkeley Storm Drainage Master Plan by CH2M HILL

Aquatic Park Natural Resource Management Study

Park contour and flooding mapping: As part of the recent study, the City had a complete survey of the park conducted which shows expected flooding scenarios based on various floodgate sizes and operation. This mapping should appear in the EIR so the public can accurately assess the results of increasing the capacity of the City's storm drains by temporarily storing flood waters in Aquatic Park.

City Attorney's project analysis that indicates the City's legal mandates for project operation options. Prior analysis indicated that if the new discharge valves were built, the City would likely have a legal liability to operate them for flood control. Such analysis would have to describe under what authority the City could refuse to follow Regional Water Quality Control Board Order 70-14.

City of Berkeley Fire Department's Saltwater Emergency Fire Protection Program: BFD has long sought a backup system to fight fires in the event of catastrophic failure of water pipes. This system is said to utilize bay water pumped through the storm drains. The department has a building to house the pumping equipment and hoses for this system in the vicinity of the Potter Storm Drain near Ninth Street.

Waterbird Population and Disturbance Response Study, May 12, 2005 by Avocet Research Associates: This study proposes dense native planting along the shoreline

areas to provide screening between park visitors and the birds feeding and roosting along the shore. A minimum depth of 10 meters of vegetation is recommended.

Aquatic Park Master Plan, 1989, Michael Painter and Associates

Previous project reports by the LMA project team. June 2007 to the Aquatic Park Subcommittee, later report to that committee, report to full commission, three reports to Council, such as the APIP Project Description January 23, 2008. All proposed project variations should be analyzed and any proposed project studies and monitoring mentioned should be incorporated into the EIR or specifically rejected with the reasons they are being discarded.

Toni Mester

2431 Tenth Street
Berkeley, CA 94710-2545
510-848-8234

November 28, 2011

Deborah Chernin
Department of Parks, Recreation and Waterfront
City of Berkeley
2180 Milvia Street
Berkeley, CA 94704

Dear Ms. Chernin,

The following are my individual comments regarding the scoping for the Berkeley Aquatic Park Improvement Program (APIP) DEIR as the project is described in the October 19, 2011 Notice of Preparation. My responses reflect reading other relevant documents and visiting the park on numerous occasions, including after storms.

I am a member of the Golden Gate Audubon Society East Bay Conservation Committee as well as the Sierra Club Northern Alameda County Group Aquatic Park Subcommittee, but the following comments are my own.

Purpose of the Project: The DEIR should clarify the purpose of the APIP and its relationship to the City of Berkeley Watershed Plan, which includes options for improving drainage of storm water in the Potter and Strawberry areas that include and/or impact Aquatic Park.

What exactly would be “improved” as a result of the APIP? Would alternative 4B function as a flood control project intended to accelerate the flushing of storm water through Aquatic Park to prevent flooding of property in West Berkeley?

Regulatory Framework: What are the legal constraints of using the APIP as a flood control project that allows for the continued release of storm water into the lagoons; specifically in regard to past California Water Board directives? These orders should be published in the DEIR along with City of Berkeley comments as to the City’s current compliance. Is the City of Berkeley currently not in compliance with Water Board orders? Would the Water Board license the continued release of storm water into the lagoons under its current protocols? If so, what would be the procedure for so doing?

What federal legislation such as Section 404 of the Clean Water Act, the Coastal Zone Management Act, and other regulations of wetlands, including state laws, apply to Aquatic Park? Does the San Francisco Bay Conservation and Development Commission (BCDC) have jurisdiction over Aquatic Park, and if so to what extent?

The DEIR should provide a complete regulatory framework for Aquatic Park.

Establishing the baseline: The APIP offers a single physical infrastructure project with two management alternatives; the Preferred Project would eliminate the inflow of storm water runoff into the lagoons from the Potter and Strawberry storm drains and Alternative 4B would allow “no additional storm water” from these two sources.

These scenarios complicate the problem of establishing a legitimate and appropriate baseline as the volume and characteristics of the storm water varies greatly by season, month, and size of the storm.

If current existing physical conditions are used to establish the baseline, then what month would be an appropriate model?

And since storm water is currently allowed into the lagoons, evaluating the “no storm water” alternative would at best be hypothetical, unless the summer months were used as the baseline.

The DEIR should establish a complex baseline that includes both the dry and wet months to better evaluate the impacts of the two alternatives as well as the potential for full release of storm water that could occur with the proposed changes to the infrastructure. The presence of migratory birds coincides with the winter storms, which means that severe impacts could occur during the wettest months. Potential maximum discharge should be included in the baseline.

An appropriate baseline should include a chart of a year of average or typical rainfall and frequency of storms correlated to the arrival and departure of the various migratory waterfowl.

Biological Resources: The various species of plants, insects, fish, *invertebrates* and birds should be cataloged by predominance in each lagoon and land area and the birds by the calendar of habitation as well. The DEIR should specify the primary food sources for the various species of waterfowl.

Defining Alternative 4B: The DEIR should define what is meant by “no additional storm water.” How will storm water run-off be quantified, by the number, volume, or timing of the storm water releases or by the number and size of the gates opened in the existing infrastructure? Does the City of Berkeley actually maintain records of such releases? The current practice of releasing storm water run-off should be documented as accurately as possible. Where and when do the releases happen and by what means? This data should include ALL sources of current storm water run-off into the park from the Potter and Strawberry storm drains, from the lateral storm water overflow pipe that connects to the Potter conduit and runs along the east side of the Park from the Potter storm drain to below the foot of Parker Street, and from the streets between University Avenue and Ashby Avenue that flows into the park from the east side.

Analysis of the runoff: The qualities and content of storm water runoff are complex and variable, including temperature and different kinds of toxins, contaminants, sediment, bacteria, bioaccumulation, and materials that can settle on the bottom of the lagoons. To better evaluate the harmful effects of allowing polluted fresh storm water into the lagoons, the DEIR should analyze the contents of current storm water runoff. As a citizen who regularly cleans the gutters of Tenth Street and Dwight Way near my house to keep trash out of the storm drains at those corners, I am familiar with the filth that is deposited on the streets that can end up in the Aquatic Park habitat including cigarette butts, food, paper, cans and other metal, auto parts, and all kinds of plastic.

Besides being polluted, the fresh storm water differs in density and salinity from the tidal bay water. The DEIR should also analyze the qualities of Bay water near the Aquatic Park conduits as well as the interaction of fresh water with Bay water in the current hydrologic configuration.

The DEIR should then model changes to the water qualities that the alteration of the physical infrastructure proposed by the APIP would induce, including impacts on biological resources such as plant species, fish, and birds.

Project Description: The DEIR should describe the current and proposed physical changes of the hydrologic system in detail including the size and composition of conduits and channels, their connections, trash collection, water filtering treatment, construction materials, and the precise operation of the system that regulates the inflow and outflow of storm and tidal waters.

The phasing of the project should also be detailed with descriptions of the potential impacts of any changes to the hydrologic system on habitat and recreational use. Which work on the physical infrastructure has priority and in which order? What time of year would be optimum for accomplishing

each phase? And how would the order of work impact the habitat and recreational use of the Park if funding for the next phase proves to be an obstacle to the completion of the entire project?

Option 1 of the Watershed Plan (Potter Watershed Findings/Resolution of SF Tidal Effects pp. 70-72) would rebuild the Potter Street conduit to a volume large enough to carry all projected storm water, precluding storm water being released from that source for flood control.

If Option 1 were approved and funded by a bond, taxes, or benefits under the West Berkeley Project (or a combination thereof), then how would that project affect the changes in the infrastructure proposed by the APIP? Would not the Potter connections under the APIP become obsolete, redundant, or unnecessary? If so, what part of the APIP would best be finished first? Would it be feasible and prudent to delay the work on the Potter Street connections until funding for Option 1 were secured?

Effects of allowing fresh polluted storm water into the main lagoon: Enlarging the current Potter storm drain outlets and cutting a channel connecting the middle basin and the main lagoon would increase the amount of fresh polluted storm water in the main lagoon under Alternative 4B. The DEIR should calculate the impact of such release on the water qualities of the main lagoon and its biological resources including plants, fish, and fowl.

Effects of increased tidal action: Cleaning the tidal bores and enlarging the Potter and Strawberry connections will increase the tidal action in the middle basin and the main lagoon. The DEIR should analyze the effects of such increased tidal action on the water characteristics and biological resources of the basins including the effects on trees and plants that grow along the edges of the water, shelter and provide foraging areas for the birds. The DEIR should also study the effects of increased tidal action on the fish and insects that the birds eat. What will be the effects on the cypress trees that provide roosts for egrets and herons? Will the increase in the tidal action create erosion of the park's shoreline? What would be the impacts of this erosion on lagoon levels and water temperatures, particularly during warmer months?

Maps, graphs and visual description: The technical data such as rainfall patterns in the APIP should be better explained for the general reader. Graphs and other data should be accompanied by interpretations that can be easily understood in the context of the proposed changes.

The storm water overflow pipe that runs along the east side of the lagoons is not visible on most depictions of Aquatic Park hydrology. This conduit as well as the covers on and near the trail where storm water is released should be indicated as should the places where run-off currently enters the Park from streets between University Avenue and Ashby Avenue.

Contour maps showing the likely changes in the tidal regime and a bathymetric chart showing the underwater contours of the lagoons should be included.

Elevation maps showing the railroad berm, the freeway landfill, the creeks, the Bay, and other significant features of land and water formation and their relationship to the lagoons should be included so that readers can appreciate the elevation of the lagoons above the Bay and other geographical features.

A chart showing the volume of storm water discharges over the course of a typical winter season should be overlaid with the presence and numbers of migratory and over wintering waterfowl.

Water flow charts with arrows that document the circulation of waters from various sources in different circumstances should illustrate no discharge of storm water at high and low tides, limited discharge of storm water at high and low tides, and full discharge of storm water at high and low tides. That would mean six water flow charts to show the proposed circulation of water for each condition.

I hope these comments are useful.

Sincerely,

Toni Mester

NATIVE AMERICAN HERITAGE COMMISSION

915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax



November 8, 2011

Deborah Chemin
City of Berkeley
2120 Milvia Street
Berkeley, CA 94704

RE: SCH# 2009062093 Berkeley Aquatic Park Improvement Project EIR; Alameda County.

Dear Ms. Chemin:

The Native American Heritage Commission (NAHC) has reviewed the Notice of Preparation (NOP) referenced above. The California Environmental Quality Act (CEQA) states that any project that causes a substantial adverse change in the significance of an historical resource, which includes archeological resources, is a significant effect requiring the preparation of an EIR (CEQA Guidelines 15064(b)). To comply with this provision the lead agency is required to assess whether the project will have an adverse impact on historical resources within the area of project effect (APE), and if so to mitigate that effect. To adequately assess and mitigate project-related impacts to archaeological resources, the NAHC recommends the following actions:

- ✓ Contact the appropriate regional archaeological Information Center for a record search. The record search will determine:
 - If a part or all of the area of project effect (APE) has been previously surveyed for cultural resources.
 - If any known cultural resources have already been recorded on or adjacent to the APE.
 - If the probability is low, moderate, or high that cultural resources are located in the APE.
 - If a survey is required to determine whether previously unrecorded cultural resources are present.
- ✓ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
 - The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure.
 - The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.
- ✓ Contact the Native American Heritage Commission for:
 - A Sacred Lands File Check. **There were no sites found as of 11/8/2011.**
 - A list of appropriate Native American contacts for consultation concerning the project site and to assist in the mitigation measures. **Native American Contacts List attached.**
- ✓ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
 - Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5(f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
 - Lead agencies should include in their mitigation plan provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans.
 - Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7050.5, CEQA §15064.5(e), and Public Resources Code §5097.98 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

Sincerely,

Katy Sanchez

Katy Sanchez
Program Analyst
(916) 653-4040

cc: State Clearinghouse

Native American Contact List

Alameda County

November 7, 2011

Indian Canyon Mutsun Band of Costanoan
 Ann Marie Sayers, Chairperson
 P.O. Box 28 Ohlone/Costanoan
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Amah/Mutsun Tribal Band
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 789 Canada Road Ohlone/Costanoan
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Don Hankins
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 canutes@verizon.net Bay Miwok
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Amah/Mutsun Tribal Band
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 882 Bay view Avenue Ohlone/Costanoan
 Pacific Grove, CA 94062
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 831-372-7078 - fax

Trina Marine Ruano Family
 Ramona Garibay, Representative
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Amah/Mutsun Tribal Band
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 7273 Rosanna Street Ohlone/Costanoan
 Gilroy, CA 95020
 408-842-3220

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH# 209062093 Berkeley Aquatic Park Improvement Project EIR: Alameda County.

Native American Contact List
Alameda County
November 7, 2011

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Muwekma Ohlone Indian Tribe of the SF Bay Area
Rosemary Cambra, Chairperson
2574 Seaboard Avenue Ohlone / Costanoan
San Jose , CA 95131
muwekma@muwekma.org
408-205-9714
510-581-5194

Amah/Mutsun Tribal Band
Jean-Marie Feyling
19350 Hunter Court Ohlone/Costanoan
Redding , CA 96003
jmfgmc@sbcglobal.net
530-243-1633

The Ohlone Indian Tribe
Andrew Galvan
PO Box 3152 Ohlone/Costanoan
Fremont , CA 94539 Bay Miwok
chochenyo@AOL.com Plains Miwok
(510) 882-0527 - Cell Patwin
(510) 687-9393 - Fax

Linda G. Yamane
1585 Mira Mar Ave Ohlone/Costanoan
Seaside , CA 93955
rumsien123@yahoo.com
831-394-5915

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH# 209062093 Berkeley Aquatic Park Improvement Project EIR: Alameda County.

DRAFT ENVIRONMENTAL IMPACT REPORT

SCOPING MEETING

COMMENT CARD

(Please note that this document will be part of the public record.)

Date: Wednesday, November 16, 2011
Location: North Berkeley Senior Center, Classroom C
Project: Berkeley Aquatic Park Improvement Program

Comments may be submitted at the Scoping Meeting

Name (Please Print): CLARENCE SEMAS
Mailing Address: 297 DAHLIA ST., FAIRFIELD, CA 94533 107-429-4570
Resident, Business, Organization, etc.: BERKELEY WATER SKI CLUB
Comment (s): THE ISLAND AREA ELEVATION IS BEING CHANGED?
IT COULD AFFECT THE WATERSKIING COURSE. ALSO,
THE DIRT CANNOT BE MOVED TO OUR PARKING LOT.
OUR CLUB HAS BEEN AT BERKELEY AQUATIC PARK
SINCE 1960. IT WOULD BE A SHAME IF WE COULD
NOT USE THIS AS OUR RECREATION AREA.

Completing and signing this document is voluntary. The City of Berkeley may use this information for statistical purposes, to notify you of any future meetings, or to assist in providing you with further information. This document is a public record and may be subject to inspection and copying by other members of the public.



Northern Alameda County Group

(Alameda-Albany-Berkeley-Emeryville-Oakland-Piedmont-San Leandro)

2530 San Pablo Avenue, Suite I, Berkeley, CA 94702

510-848-0800 (voice) · 510-848-3383 (fax)

City of Berkeley
Department of Parks, Recreation & Waterfront
ATTN: Deborah Chernin
2180 Milvia St.
Berkeley, CA 94704

November 28th, 2011

Re: Notice of Preparation (NOP) of Draft Environmental Impact Report (DEIR) for Berkeley Aquatic Park Improvement Program (APIP)

Dear Ms. Chernin:

The Sierra Club appreciates the opportunity to submit comments and suggestions for topics to be considered in the DEIR for the Berkeley APIP. The following environmental principles are among those that guide the Sierra Club's assessment of any project and may be applicable to APIP:

Wetlands: All federal and state or provincial programs should be implemented to ensure that wetlands are protected. State, provincial, and local governments should adopt protective laws and effective implementation programs.

Precautionary Principle: When an activity potentially threatens human health or the environment, the proponent of the activity, rather than the public, should bear the burden of proof as to the harmlessness of the activity. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing measures to prevent environmental degradation.

The Sierra Club agrees with the City of Berkeley's characterization of the diversity of Aquatic Park's flora, fauna, bird habitat, and human uses. The NOP states that the "three separate lagoons ... support a variety of wildlife, including fish, invertebrates, and birds" and contain both "salt/brackish wetland" and "freshwater wetland." In addition, the Park is employed for "active recreation such as waterskiing, rowing, kayaking, bicycling, hiking, and bird watching." These unique and complex characteristics afford the need to carefully assess any potential impacts posed by the various components of and alternatives within the APIP.

The Sierra Club commends the decision of the City's Parks and Recreation Commission (P&RC) to modify the hydrologic component in order to propose the elimination of all current storm water inflow to the lagoon system from the Strawberry and Potter Street storm drain connections and to analyze this proposal as the Preferred Alternative. Such an alternative appears to conform with Order 70-14 of the Regional Water Quality Control Board, which permanently prohibits the discharge of runoff into the

Aquatic Park lagoons. The preferred alternative contrasts with APIP Alternative 4B (“No additional Storm Water”), which, while potentially reducing flooding in West Berkeley, appears to fall short of protecting the Aquatic Park lagoons from the entrance of storm water and the consequent mixing of waters with varying salinity.

In addition, the environmental impact analysis must look at the impacts to the rafting birds that use Aquatic Park on their migration as a resting and feeding stop. The city bans any motorized boating activity from November through May to protect the rafting birds. The DEIR should conduct a careful and complete analysis of how each alternative would affect the birds, biota, and other wildlife. The Sierra Club is especially concerned about adverse environmental impacts. The preference would be that, should any be identified, that the City should explicitly state how to avoid those impacts rather than seeking mitigations. In addition, the Sierra Club believes that the analysis should determine if there are any beneficial impacts to the birds and other biota under each alternative. Moreover, alternatives should be selected that promote the beneficial impacts of any project.

We believe that answering the following questions and comments is essential to help the community better understand the project description so that anticipated impacts can be accurately considered in the DEIR.

Project Description: What changes, if any, have been made to the project description since the previous NOP / Scoping Session? What is the exact project description for the proposed projects? What changes will be made to the current system of pipes that move tidal and storm waters? What new openings will be made on the Potter and Strawberry Storm Drains?

Please describe the sizes, shapes, and elevations of those openings and the volumes of water that they can carry during maximum storm conditions. Please show all weirs or gates for controlling water flow that will be constructed, and describe how they operate and their proposed operating protocol. What are their maintenance requirements and schedule? How will the Main Lagoon be connected to the Model Yacht Basin? We request that the review identify the size, shape, and materials of any pipe or flow channel and bridge.

How will both sides of the various tide tubes be treated? Where will armoring occur? Will the culverts have gates on both sides to block the movement of toxics during a spill?

New Tidal Regime: The project has been described by Parks staff as improving the movement of tidal waters through the lagoons. What will be the new tidal regime for the lagoons once the conduits for storm water discharge are enlarged? We request that the DEIR show contour maps of projected new levels of high and low tides throughout the year. It should include a clear description of the longer periods of total inundation and total desiccation related to the elevation of the tide tube openings and seasonal tidal variations. Environmental review must include impacts caused by tide levels that are higher than the park's design level. Would salt water intrusion into the higher shoreline vegetation damage the shoreline cypress trees that provide sheltered roosting and feeding for wading birds and

other waterfowl? How will this likely loss of shoreline vegetative screening affect waterfowl? The environmental review should also identify areas of shoreline collapse over time caused by operating the lagoon system at levels higher than what it is designed to accommodate. What are the potential impacts on the park's infrastructure from such higher tidal levels?

Water Temperature: From our understanding, higher-than-optimal water temperatures have been identified by Parks and Recreation Staff as the primary habitat problem that the project is intended to solve. What are the expected impacts of lower lagoon levels on water temperatures? What is the likely impact on benthic invertebrates that are now regularly exposed to air, during the new regime of lower tides?

Recreational Uses: What are the expected impacts on recreational use of the lagoons? Will boating activities become unsafe during low tides if the City abandons the original park design protocol for maintaining the lagoon level high enough for boating? How will the changes to Bird Island and other land area affect current activities by the water ski and rowing clubs?

Marine Life: What are the expected impacts on the rate of sedimentation within the lagoon? How will the project operation avoid the eventual death of the lagoons as deepwater habitat for migratory waterfowl? During warm weather, fish naturally move to deeper, cooler water. How will the project maintain the viability of marine life given the likely sedimentation of these refuge areas? Please inventory fish and fowl by locations within the park as well as the calendar year.

Phasing: What is the proposed phasing of construction? How long will it take to dredge a channel between the Main Lagoon and the Model Yacht Basin and install a bridge? During what time of year will it occur? How will recreational users be impacted by each construction project?

Operational Protocol: Who and what determines how much storm water is released into the park? Is there any water quality benefit attributable to these discharges? Please compare any negative impacts that have been identified for these discharges under all three possible alternatives: no discharge, same discharge as now, and full discharge per system capabilities. Will all weirs and flood gates be automated to close when storm water is present in the storm drains?

Monitoring: What ongoing monitoring of conditions will be required? Will the amount of flow of tidal water and storm water through each outlet be automatically monitored and viewable to the public online, and which periodicity will be used to update this information?

Water Quality: The DEIR should compare all major expected changes in water conditions and quality throughout the calendar year, the tidal cycles, during storm conditions, and over time: temperature, salinity, turbidity, contaminants, depth, toxins, sediment, and suspended material that can settle.

Storm Water Discharge: The proposed project can discharge storm water into the lagoons at a rate higher than is currently possible during major storm activity and high tide cycles when storm drain capacity is inadequate. The environmental review should therefore produce the data expected from all three operating systems: no storm water discharge, no additional discharge, and potential for full discharge. Will the contour maps show lagoon levels that accurately describe water levels and conditions under all three operating scenarios?

Shoreline Vegetation: The potential loss of shoreline vegetative screening may increase visitor impact, human and canine, on waterfowl. Will mitigating measures include planting native species and construction of fixed wildlife overlooks set in the landscape?

Project Alternatives: The DEIR must analyze alternatives to the infrastructure project under consideration. As one such alternative, a one-way outbound flow from the Main Lagoon into a widened Strawberry Storm Drain should be modeled, as it would provide a dedicated drain for the system, avoiding the internal water turbulence that may result from the project as currently proposed. Connecting the Main Lagoon with the Model Yacht Basin using a pipe, rather than a channel and bridge system should be analyzed, as it may have a lower impact on the park's resources.

Bird Island: What is proposed at Bird Island and for what purpose? What alternatives are being considered, and which is the preferred option? The APIP calls for replanting the island with Monterey Cypress trees to accommodate roosting and nesting for wading birds and other waterfowl.

Aquatic Park Watershed: What will change in the handling of storm water in the Aquatic Park drainage east of the park and for what purpose? What alternatives are being considered, and which is the preferred option? The APIP planning process studied a system of biofiltration of storm water, not for mechanical filtration.

Mitigations: What mitigation measures will be mandated as part of the project approval? Possible measures to mitigate the damages caused by the proposed tidal regime include: armoring and replanting of all shoreline areas which will be affected by higher lagoon levels, dredging throughout all areas of the lagoons to counter the expected increased rate of sedimentation, and new roosting for waterfowl to replace roosting sites lost by higher water levels.

The Sierra Club respectfully requests that these questions and comments be addressed in the APIP DEIR. We look forward to working with you over the course of this process. Should you have any questions, please do not hesitate to contact us at 510-848-0800 or ssyed@sonic.net.

Sincerely,

Sarah Syed, Chair

Sierra Club, Northern Alameda County Group

Committee to Minimize Toxic Waste

RECEIVED
CITY OF BERKELEY
NOV 28 2011
PARKS RECREATION
& WATERFRONT

City of Berkeley
Department of Parks, Recreation & Waterfront
2180 Milvia Street
Berkeley, CA 94704

Attn: Deborah Chernin, Principal Planner

Re: Comments on the Recirculated Notice of Preparation (NOP)
of an Environmental Impact Report (EIR) for the Berkeley
Aquatic Park Improvement Program (APIP)

Dear Ms. Chernin,

There has been great concern over Aquatic Park for over 20 years, which resulted in the 1990 Aquatic Park Master Plan (APMP). So the question now is, what is the big rush?

Why was there no adequate public noticing of the November 16, 2011 public hearing on the above referenced document? There are many interested commissions, individuals and organizations, such as ours, that never received a notice, therefore I am formally requesting that a hard copy of the Draft EIR be mailed to us to the address below.

So what is the big rush? The City of Berkeley is in the process of radically changing all zoning laws in West Berkeley to benefit private companies, landowners and developers who own large parcels, many of them abutting the Aquatic Park lands. So we ask that the potential impacts from the City's zoning law changes be evaluated and analyzed in the DEIR.

The Lawrence Berkeley National Laboratory (LBNL) has also announced that two separate sites associated with the Aquatic Park (i.e. Berkeley Aquatic Park West and a property on the Emeryville-Berkeley border) are being considered for LBNL's Second Campus, a two million square foot development dedicated to biosciences. On November 22, 2011 LBNL announced a delay in revealing where the Second Campus would be located (originally the announcement was slated for late November 2011), so we ask that the DEIR evaluate and analyze the potential environmental impacts from a LBNL Second Campus development and operations on the Aquatic Park lands and water. (See attachment 1.), especially in view of the letter, dated September 27, 2011, addressed to the Berkeley City Council (and others), expressing grave concern over the location of the UC Berkeley Synthetic Biology Institute (SBI) at LBNL's Second Campus, due to the risks associated with its research on synthetic biology. (See attachment 2.) Please, include the authors of this letter on your mailing list for all future mailings regarding the DEIR.

Furthermore, it is expected that West Berkeley will house several commercial LBNL spin-off companies, that will feed off the Lab's research. Potential environmental impacts of these LBNL spin-off companies must be analyzed in the DEIR.

The DEIR must also include a very specific and detailed description of the proposed project. What indeed are the objectives of the implementation of the APIP?

What attempts have been made in the past to improve the water quality of the Aquatic Park? For several years piles of dredging spoils were observed on the banks of the Park's lagoons. What were the results of the dredgings on the lagoons' water quality? What were the testing results for lead and other hazardous components of the dredging spoils? Please include all testing data as well as a map (of the work plan) showing specifically all the dredging locations, what was the total volume of the spoils and where were they disposed of and at what cost?

Are there any comprehensive studies, including sediment cores, done with respect to evaluating the extent and degree of lead contamination, the rate of sedimentation etc. at the Aquatic Park lagoons? Please include all data, plans etc. as an appendix in the DEIR.

Also, how specifically are tidal connections being proposed to be modified with the San Francisco Bay? Please describe current connections, why they are not working, and how the proposed modifications are supposed to improve the situation? Include the plan for the design modifications of all the hydraulic structures.

In recent years (2006-2008) the City of Berkeley tested stormwater entering the lagoons. Please include the stormwater sampling plan, including sampling locations, all testing results and final report as an appendix in the DEIR. What are the current and historical volumes of stormwater entering the lagoons?

In addition to the above and in summary, the scope of the APIP DEIR must include:

- comprehensive analysis of global warming impacts, i.e. estimates for long term sea level rise and its impacts on the San Francisco Bay and Aquatic Park lagoons,
- a comprehensive sediment coring protocol at various parts of the lagoons to evaluate sedimentation rates, the degree of lead etc. contamination, and to determine what the tidal prism was in the 1930s and what it is now,
- a comprehensive dredging plan, if considered, and its costs. If it is deemed that the concentration of lead in the spoils qualify as hazardous waste, what are the costs and locations for disposal? Who is going to pay? Is Caltrans involved in this project? How? What is the role of abutting property owners?

The 1990 Aquatic Park Master Plan (APMP) was very ambitious and proposed picnic areas, recreation grounds, beaches, organic gardens, skateboard ramps, pedestrian bridges over lagoons, dog parks, California native gardens etc. (See attachment 3.)

What portions of the APMP have been implemented, if any, and what is the role of the APMP with respect to the now proposed APIP? Please, explain.

Sincerely,



Pamela Sihvola
CMTW
P.O. Box 9646
Berkeley, CA 94709

Attachments:

1. LBNL letter of November 22, 2011, delaying the announcement regarding a preferred site for the second campus.
2. A letter of concern from 12 organizations, dated September 27, 2011, regarding risks associated with with research on synthetic biology, proposed for LBNL's second campus.
3. Final recommended plan (figure 2, pages 23024) of the 1990 Aquatic Park Master Plan (APMP)

LAWRENCE BERKELEY NATIONAL LABORATORY

November 22, 2011

Contact: Jon Weiner
510-486-4014
jrweiner@lbl.gov

**Berkeley Lab Second Campus Preferred Site Announcement
Expected in 2012**

Berkeley, CA, November 22, 2011—The University of California announced today that its decision regarding a preferred site for the second campus of the Lawrence Berkeley National Laboratory (Berkeley Lab) is expected to be announced in early 2012.

The timeline for the second campus selection process had called for a late-November announcement.

"We have been working diligently over the past months since announcing our list of finalists," says Berkeley Lab Director Paul Alivisatos. "We want to thank all the cities, developers and community members who have been participating in our selection process. We have been overwhelmed by the positive and extremely thoughtful responses from the communities of Alameda, Albany, Berkeley, Emeryville, Oakland and Richmond. We are deeply grateful for such well-formulated responses, but find that we need a bit more time to fully evaluate our options and to confer with stakeholders in order to arrive at the best possible decision. We have a number of excellent options before us. Our goal now is to complete this phase of the process and announce a preferred site as soon as we can."

The vision of the second campus is to consolidate existing Berkeley Lab bio-science programs currently in leased space throughout the East Bay, to provide opportunity for future laboratory expansion, and to secure a venue that continues the 80-year tradition of close collaboration between the Berkeley Lab and the UC Berkeley campus.

The University of California received more than 20 responses when a Request for Qualifications (RFQ) was released earlier this year. The number of sites under review was narrowed in May to:

- **Alameda Point**, in the city of Alameda;
- **Berkeley Aquatic Park West**, located in West Berkeley;

- **Brooklyn Basin**, located in Oakland;
- **Emeryville/Berkeley**, (includes properties currently occupied by the Lab in Emeryville and West Berkeley);
- **Golden Gate Fields**, spanning the cities of Berkeley and Albany;
- **Richmond Field Station**, a site currently owned by the University of California.

#

Lawrence Berkeley National Laboratory addresses the world's most urgent scientific challenges by advancing sustainable energy, protecting human health, creating new materials, and revealing the origin and fate of the universe. Founded in 1931, Berkeley Lab's scientific expertise has been recognized with 13 Nobel prizes. The University of California manages Berkeley Lab for the U.S. Department of Energy's Office of Science. For more, visit www.lbl.gov.

In 10/25/11 packet
Berkeley City Council

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3

ATTACHMENT 2.
(PAGES)

September 27, 2011

City Council
City of Alameda
2263 Santa Clara Avenue
Alameda, CA 94501

City Council
City of Albany
1000 San Pablo Avenue
Albany, CA 94706

City Council
City of Berkeley
2180 Milvia Street
Berkeley, CA 94704

City Council
City of Emeryville
1333 Park Avenue
Emeryville, California 94608

City Council
City of Oakland
1 Frank H. Ogawa Plaza
Oakland, CA 94612

City Council
City of Richmond
440 Civic Center Plaza
Richmond, CA 94804

Dear City Council Members:

We are writing to raise concerns about the proposed second campus of the Lawrence Berkeley National Laboratory (LBNL) and the U. C. Berkeley Synthetic Biology Institute (SBI) that is being considered for one of your respective cities. Much of the research that will be conducted in this laboratory will be on the emerging technology called synthetic biology. Synthetic biology is an extreme form of genetic engineering that is attempting to create novel, potentially self-replicating artificial life forms from synthesized DNA. The risks this research poses to worker safety, public health and the environment are currently being ignored.

While some find promise in synthetic biology for manufacturing new products and helping us to better understand biological processes, it is an inherently risky technology. Synthetic biology research could result in enhanced virulence in existing hosts, heightened ability to infect a wider range of hosts, and resistance to antimicrobials, antivirals, vaccines and other treatment or containment modalities.

Laboratory accidents are much more common in the U.S. than most people realize and often go unreported. If there were an accidental release of engineered organisms in this lab, the health of workers, the environment and entire communities could be put at risk. Already, the current lack of adequate safety protocols and biocontainment within rDNA labs has caused serious illness and death. Since synthetic biology's objective lies in engineering novel life forms and products with the potential to interact with human biology and other cellular processes, we believe this research poses dangers (both from accidental and deliberate uses) unforeseen in the regulatory framework of standard rDNA research.

Therefore, before any decisions are made on a specific site for this new lab, we believe a comprehensive, independent and transparent safety and risk analysis capable of assessing these threats must be completed. It is simply unacceptable to allow the laboratory to self-regulate. Moreover, it must be ascertained whether such research is even appropriate near urban centers. Safety regulations and procedures must be created and tailored to address the novel aspects of this new science, including whistleblower protections and forums for workers to raise concerns,

and the costs to any municipality of an appropriate public safety infrastructure must be identified.

Finally, independent regulatory oversight must be assured, particularly because both public and private entities will be operating at the lab. Every stage of this process must be open to and involve the public, including town hall meetings to discuss and address health and safety issues.

The Lawrence Berkeley National Laboratory and the U. C. Berkeley Synthetic Biology Institute must undertake the burden of proof as to whether their laboratory will be safe before any community can make an informed decision about inviting it to break ground in their backyard.

Sincerely,

Alliance for Humane Biotechnology

BioFuel Watch

California Coalition for Worker's Memorial Day

Center for Food Safety

Center for Genetics and Society

Council for Responsible Genetics

Friends of the Earth

Global Justice Ecology Project

International Center for Technology Assessment

National Injured Worker's Network

National Workrights Institute

Pesticide Action Network of North America

*If you have any questions or need any additional information, please do not hesitate to contact:

M. L. Tina Stevens, Ph.D.
Executive Director
Alliance for Humane Biotechnology

and

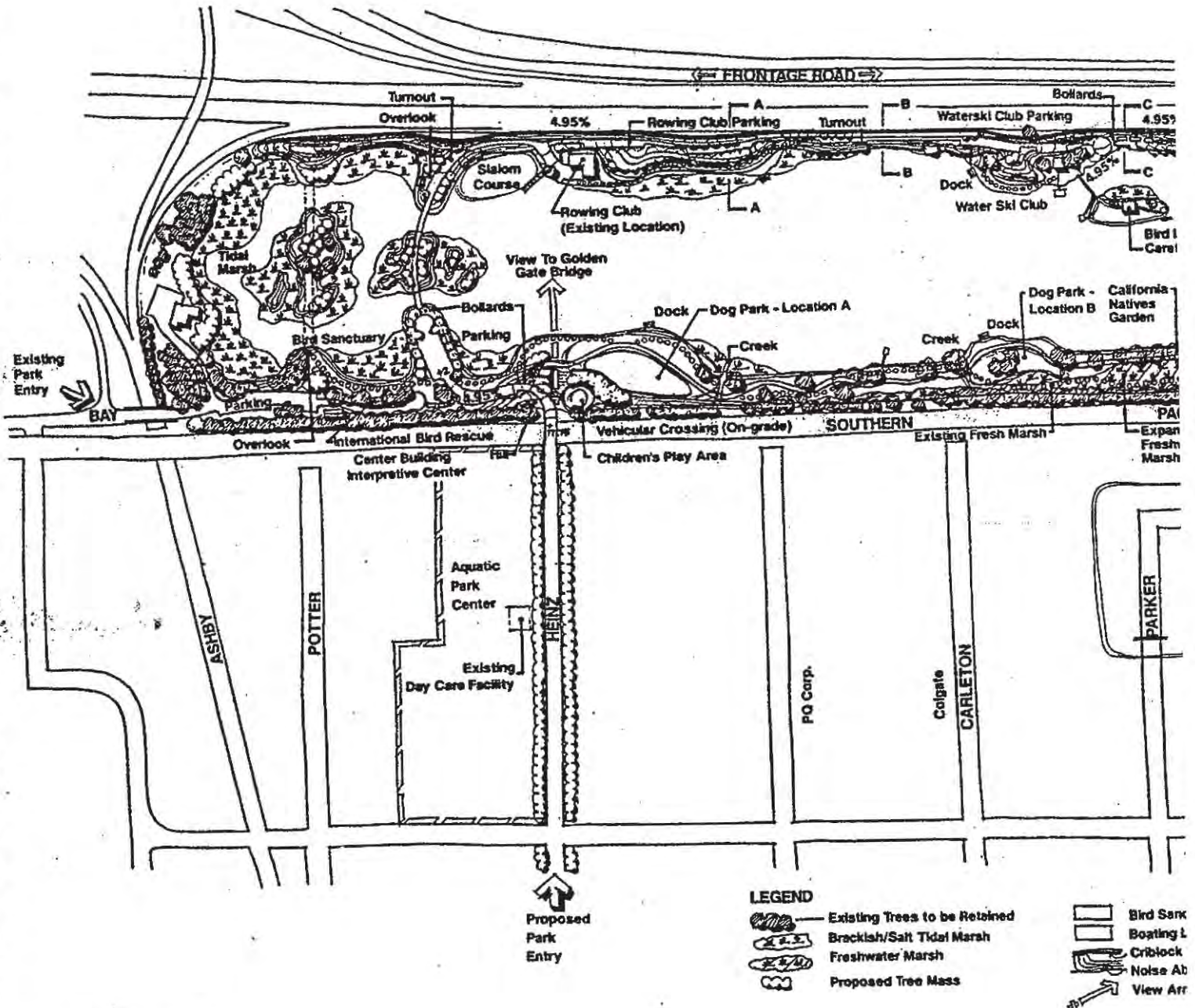
Jeremy B. Gruber, J.D.
President
Council for Responsible Genetics

at 609-610-1602 or jcgg@concentric.net

Figure 2

AQUATIC PARK

FINAL RECOMMEN



SCOPING MEETING

DRAFT ENVIRONMENTAL IMPACT REPORT

Berkeley Aquatic Park Hydrology and Habitat Improvement Project - City of Berkeley

SIGN IN SHEET

Meeting: 7:00 P.M. 10-24-11

| # | NAME (PLEASE PRINT) | ORGANIZATION/AFFILIATION (IF ANY) | ADDRESS |
|----|---------------------|-----------------------------------|---|
| 1 | TONI MESTER | | 2431 Tenth St Ber 94710 |
| 2 | PANA YOUNG | | 479 VASSAR AVE 94708 <small>panayoung@msc.com</small> |
| 3 | John Steele | Berkeley Partners for Parks | 2327 Webster 94705 |
| 4 | | | |
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City of Berkeley

PARKS & RECREATION COMMISSION
PUBLIC COMMENT

Subject: BERKELEY A&P - DEIR - SCOPING MEETING
Name: PAM YOUNG
Address: 474 VASSAL AVE BERKELEY 94708
Phone: 510 725 2228

If you represent
an organization: _____
(Name of Organization)
Date: 24 DEC 11



City of Berkeley

PARKS & RECREATION COMMISSION
PUBLIC COMMENT

Subject: APIP NOP
Name: MARK LIDVOS
Address: 1846
Phone: 549-0818

If you represent
an organization: Aguntic Park EGOSET
(Name of Organization)
Date: 10/24/11



City of Berkeley

PARKS & RECREATION COMMISSION
PUBLIC COMMENT

Subject: APIP SCOPING
Name: Matt Brandt
Address: 2162 Arroyo Ct Berkeley CA
Phone: 510 921 6926

If you represent
an organization: Berkeley Water Gki City
(Name of Organization)
Date: 10/24/11



City of Berkeley

PARKS & RECREATION COMMISSION
PUBLIC COMMENT

Subject: APIP
Name: John Seal
Address: 2329 Webster
Phone: 845-1569

If you represent
an organization: Berkeley Partners for B&P
(Name of Organization)
Date: 10/23/11



City of Berkeley
PARKS & RECREATION COMMISSION
PUBLIC COMMENT

Subject: Storm Water
Name: Mark Lichios
Address: 1846 Parker St
Phone: (510) 549-0818
If you represent
an organization: _____
(Name of Organization)
Date: 10/24/11

PUBLIC HEARING



City of Berkeley
PARKS & RECREATION COMMISSION
PUBLIC COMMENT

Subject: Agua Fria Lake North End of Park
Name: Patricia Paragon Jones
Address: 3019 2nd St
Phone: 510 849 3534
If you represent
an organization: _____
(Name of Organization)
Date: _____

APIP EIR Combined - pg 340



City of Berkeley
PARKS & RECREATION COMMISSION
PUBLIC COMMENT

Subject: APIP NOP
Name: Toni Mester
Address: 2431 10th St. Berkeley 94710
Phone: 510. 848. 8234
If you represent
an organization: _____
(Name of Organization)

Date: 10-24-2011